DOCTORAL THESIS

Personality and Parental Bonding in Stress Reactivity and Chronic Stress

Orekhova, Elizabet

Award date:
2014

Awarding institution:
University of Roehampton

Personality and Parental Bonding in Stress Reactivity and Chronic Stress

by

E Orekhova BA, MSc

A thesis submitted in partial fulfilment of the requirements for the degree of

PsychD

Department of Humanities

University of Roehampton

2014

ABSTRACT

Background: The main aim of the present research was to investigate the individual differences in personality, parental bonding, and stress reactivity in order to explain the underlying mechanisms that may sustain chronic stress. In light of the central role of both personal and social factors in shaping one's experiences as identified by the previous literature, the present study sought to investigate how these aspects interrelate within the framework of chronic stress. It was hypothesised that chronic stress may be the result of maladaptive patterns of interaction between personal and social dispositions in stress processing.

Method: The participants included a student and a community sample. Levels of chronic stress, stress reactivity, personality traits, and parental bonding experiences were assessed through self-reported questionnaires. **Hypotheses:** There were three models of chronic stress conceptualised and tested – general, social, and achievement. The defining features of the general model included parental bonding (affection and control) and personality dispositions. Affection in parental bonding, agreeableness, extraversion, and emotional stability comprised the social model of chronic stress. On the other hand, controlling bonding, extraversion, emotional stability, and conscientiousness were the defining elements of the achievement model of chronic stress. Interaction effects and structural pathways were examined for each of the models through regression analyses and structural equation modelling.

Results: The findings included significant interaction effects among the variables of parental bonding and personality as well as idiosyncratic pathway structures for each model. The results were discussed with regard to clinical implications. **Discussion:** It was concluded that an effective direction for therapeutic work with regard to chronic stress

would target stress reactivity by addressing the mismatch between personal and social dispositions. These individual dispositions suggested several focal points for more precise and effective therapeutic interventions.

ACKNOWLEDGEMENTS

I would like to take this opportunity to express my gratitude to those who have helped me through the completion of this doctoral thesis.

First, I would like to thank Roehampton University for the incredible journey that this doctorate was. I am deeply grateful to my professors, supervisors, lecturers, and staff for the unwavering support and encouragement throughout all the stages of this programme. I would like to express my special appreciation to my Director of Studies Prof. Robert Edelmann and my Co-Supervisor Dr. Joel Vos for their valued guidance and advice. I was fortunate to have such a strong and dedicated supervisory team. I would also like to thank my committee members, Dr. Wendy Nicholls and Dr. Elias Tsakanikos for their genuine interest in my work, for letting my defence be enjoyable and encouraging, and for their excellent feedback and suggestions.

I am extremely grateful to all of my participants, who were not paid to participate in this project, yet were generous with their time and effort, and without whom this project could have never been accomplished. I am very thankful for my colleagues, for their support and care, and the journey that we shared. I would also like to thank the professors who had taught me in the past and who continue to be great encouragement and inspiration in the present, in particular, Dr. Ira Konstantinou, Dr. Michele Cohen, Dr. George Berguno, and Dr. David Gallardo-Pujol, as without them I would not be the person I am today.

Words cannot express my love and gratitude for my family and friends. I am extremely thankful to my wonderful parents and my sister for their unwavering faith in me and for their devoted encouragement of all my pursuits, to my beloved grandmother for her love and prayers, and to my incredible uncle for without him I would not have returned to the UK and would not be a counselling psychologist today. I am infinitely grateful to my friends, who are like second family to me, especially to Justin, Eva, Claire, Michelle, and Dessy for their unconditional love, loyalty, patience, kindness, understanding, optimism, and for standing by me regardless of circumstances.

I dedicate this thesis to my family and friends, for I cannot imagine my life without you.

CONTENTS

INDIVIDUAL DISPOSITIONS IN CHRONIC STRESS

This study was an investigation of chronic stress. From the clinical point of view, working with chronically stressed clients was inherently complicated as individuals usually presented a broad range of psychological and physical symptoms, moods and behaviours, including anxiety, panic and depression, impaired cognitive functioning and the ability to get work done (Jenkins & Palmer, 2003). Based on the inferences and gaps in the research literature, this study aimed to investigate the mechanisms behind chronic stress through exploration of interactions among individual dispositions. In this project it was hypothesised that chronic stress was strongly determined by the interactions between personality and parental bonding, and so was stress reactivity.

The overall aim of this project was to explore the patterns that were associated with chronic stress. These patterns were expected to portray and explain chronic stress through interrelations of individual dispositions, namely aspects of personality and parental bonding. Rooted in the assumption that personality traits represent unique individual predispositions and early bonding is fundamental for social learning and adaptation, this study aimed to integrate personal and social individual dispositions in order to assemble a more encompassing depiction of chronic stress. With chronic stress being a serious health concern, this project intended to identify the interactions among individual differences associated with vulnerability to stress reactivity and subsequently to chronic stress, thus hoping to contribute to the development of better-suited therapeutic interventions.

This project introduced three models of chronic stress. The hypotheses that would be discussed and tested here were formulated with regard to the three models that would be conceptualised. Therefore, there were three main research questions set out to investigate whether general, social, and achievement models of chronic stress indeed represented a

useful way of conceptualising the experience of chronic stress. The more precise hypotheses would target specific processes that were proposed to drive and maintain chronic stress.

The objective of first chapter was to introduce and define the phenomenon of chronic stress and to provide the necessary background information. Physiological and psychological processes that are inherently implicated in stress and chronic stress were briefly discussed. Furthermore, several therapeutic perspectives were introduced in order to locate chronic stress within the field of counselling psychology. Chronic stress was further discussed in relation to several principal therapeutic theories.

The second chapter of this thesis focused on reviewing the current literature with regard to chronic stress and the individual differences investigated in this study. A brief overview and a critical discussion of the personality literature and of social bonding research were presented. This chapter also aimed to present theoretical explanation for this study's objective to integrate personal and social aspects of individual differences. The third chapter presented the research objectives in detail. An overview of the present study described the general objectives, which were followed by description and explanation of the proposed models in chronic stress.

Chapter 4 presented the technical summary of the pathway models proposed. It also outlined all the hypotheses that were investigated in this study. Chapter 5 presented a detailed discussion of the methodology, including a description of the measurement instruments, procedure, and analyses. The following chapter described the obtained results. Chapter 7 provided an in-depth discussion of the results obtained and of the limitations of the current study. The findings were discussed within the framework of the current research literature. Each of the identified models was discussed separately and in-depth.

Clinical implications of the findings were further examined and proposed. Furthermore, conclusions drawn from this research study were presented and lastly future directions were also addressed. In light of the variety of operational definitions utilised here, Appendix 1 included a glossary to specify the operational definitions for the present study.

CHAPTER I

INTRODUCTION

This chapter would provide a general background for understanding the phenomenon of chronic stress. The discussion would address how stress was understood and defined differently across research and the operational definition adopted in this study would be explained. Furthermore, physiological and psychological effects of stress would be discussed in order to provide a comprehensive picture of the phenomenon. Following the discussion of health concerns associated with stress, the second part of this chapter would address the clinical issues. The aim would be to locate chronic stress within the field of counselling psychology in general and several principal therapeutic orientations in particular. The aim of this chapter was to provide the context and the rationale for a deeper understanding and further investigation of chronic stress.

Chronic Stress

Chronic stress is a widespread phenomenon that significantly contributes to an array of psychological and physiological problems. Various psychotherapeutic theories conceptualised and approached the issue of chronic stress differently, emphasizing various aspects in accordance with their theoretical framework. However, in light of the perpetual nature versus nurture debate in psychology, it appeared important to consider both personal dispositions and psychosocial influences. Therefore, both would be examined for possible pathways leading to chronic stress.

In comparison to post-traumatic and acute stress, which had generated extensive research in psychology, chronic stress was less studied. As a consequence, whilst the etiology and the effective treatment options for post-traumatic and acute stress were thoroughly described in the literature, specific areas of focus for therapeutic work with

chronic stress were not as clear. This study aimed to explore and model the underlying aspects of chronic stress, which could also serve as focal points in therapeutic work.

To begin with, the description and definition of chronic stress would be addressed in the following section. It would be followed by a discussion of psychological and physiological effects that chronic stress often entails. One of the aims of counselling psychology is to address and alleviate the distress of the clients that chronic stress brings about. Psychotherapeutic theories provided a framework that could help to inform and direct clinical work with chronic stress. At the end of this section, a brief discussion would be provided in order to locate possible conceptualisations of chronic stress within various psychotherapeutic theories.

Defining stress

Stress is defined as a state of mental or emotional strain or tension resulting from adverse or demanding circumstances ("Stress," 2014). Stress is such a widespread phenomenon in the modern world that the majority of people experiences stress to varying degrees at some point in their lives (Stambor, 2006). Almost half the adult population suffered adverse effects of stress with regard to their mental and physical health (APA, 2006). The term "stress reaction" had been used in the literature to describe the state of physiological or emotional arousal that usually results from the perception of a demand that exceeds the person's capacity to deal with it (Thoits, 1995). The stress process can be divided into two stages: *stressor exposure*, which referred to the extent to which one was likely to experience a potentially stressful event, and *stress reactivity*, which was the extent to which one was likely to show an emotional or physical reaction to that event (Bolger & Zuckerman, 1995). While stress exposure involved an external event, stress reactivity was closely linked with the individual's internal processing and perception of that event.

Stressors, that are, threats, demands, or structural constraints, which challeng the operating integrity of the organism, when accumulated, could overtax individuals' abilities to cope by depleting their physical or psychological resources, thereby increasing the probability of illness, injury, or disease (Thoits, 1995). Daily stressors are routine challenges of daily living that include both everyday concerns over work, relationships, and daily chores and possible setbacks such as arguments, unexpected work deadlines, and malfunctions that can be quite disruptive (Almeida, 2005). Even minor stressors seem to have an immediate effect on emotional and physical functioning (Almeida, 2005) and the experience of numerous daily problems may result in chronic stress (Gouin, Glaser, Malarkey, Beversdorf, & Kiecolt-Glaser, 2012).

Chronic stress referred to stress that is ongoing and enduring. However, there was no uniform agreement in relation to the definition of chronic stress and several alternatives had been proposed. Wheaton (1997) defined chronic stress as a particular form of stress that did not necessarily start as an event, but developed slowly and insidiously as a continuing problematic condition in our social environments and roles, and typically had a longer time course than life events from onset to resolution. According to Gottlieb (1997), chronic stress was an array of life difficulties and conditions, varying in form, severity and daily function. In their comprehensive review of resilience resources against chronic stress, Schetter and Dolbier (2011) defined chronic stress as consisting of ongoing demands that threaten to exceed the resources of an individual in areas of life such as family, marriage, parenting, work, health, housing and finances, and often ensues from very low income, role strains, or their combination. For the purposes of this project, chronic stress would be defined as a prolonged experience of continuous psychological strain stemming from one or multiple causes, lasting for at least six months and causing subjective distress.

Chronic stress is a complex phenomenon that affects different areas of life, such as health and general wellbeing, interpersonal relationships, productivity, and so on (Baum, Cohen, & Hall, 1993; Cohen, Janicki-Deverts, & Miller, 2007; Schetter & Dolbier, 2011). Stress also affects a range of behaviours that individuals exhibit and causes shifts in tolerance for frustration, patience, motivation and attention and these changes may constitute an additional source of influence on health (Baum, Cohen, & Hall, 1993). The cumulative impact of stress can be detrimental as over time stress responsiveness can be altered through the physiological effects of stress on autonomic, neuroendocrine and higher cognitive areas of the brain (McEwen, 2007). Therefore stress can manifest through both physiological and psychological effects, which would be briefly discussed below.

Physiological effects

It is widely believed that the stress response has evolutionary origins (Beck & Clark, 1997; Kasl & Cooper, 1987). The mobilization of body and mind was essential if human beings were to survive in a world where most of the dangers came from the environment and were difficult to anticipate or prepare for (Kasl & Cooper, 1987). Huether (1996) argued that the stress response was experienced when one was not fit enough physically and/or psychologically to cope with environmental demands, therefore stress would be signalling the need for adjustment to the requirements of the external world.

Allostasis refers to the way in which physiological reactions such as blood pressure and heart rate are moderated in response to the external environment in order to prepare the organism for stressful circumstances (McEwen, 2000). Stress-related changes in sympathetic arousal and activity in other bodily systems include increased blood pressure, heart activity, and decreased digestive and immune system function (Baum et al., 1993). The concept of allostatic load refers to the physiological cost of bodily adaptation to

adverse circumstances. This adaptation is achieved though the responsiveness and plasticity of the immune system, which is highly adaptive in the short term. However, with frequent activations of stress-responsive hormones, the body has to adapt to recurrent overdrive which is highly taxing for bodily tissues and organs (McEwen, 2003; 2007).

The neurobiological understanding of the generation and maintenance of stress appears to be well established. The immune system responds to acute stress by elevations of stress hormones, which direct the movement of various cell types of the immune system (McEwen, 2000). There are two major physiological stress response systems that have been identified: the hypothalamus-pituitary-adrenal (HPA) axis, which triggers the release of glucocorticoids (cortisol) from the adrenal cortex, and the locus coeruleus - noradrenaline/sympathetic system, which regulates catecholamines (adrenaline and noradrenaline) release from the sympathetic nerves and adrenal medulla (Kudielka & Kirschbaum, 2007). Both human and animal studies demonstrate that by prompting the release of glucocorticoids chronic stress significantly affects hippocampus, frontal cortex and amygdala, with the most significant changes occurring in youth, when these structures have not fully developed by the time of the stress exposure, and in the elderly, when age-related changes take place (Lupien, McEwen, Gunnar, & Heim, 2009).

Whilst a short term stress reaction may have adaptive functions, chronic stress implies a perpetual state of arousal. There is a large body of evidence suggesting that chronic exposure to stress is maladaptive and increases individuals' vulnerability for illness, and in particular immune and cardiovascular dysregulation (Cohen, Janicki-Deverts, & Miller, 2007; McEwen, 2000; 2007). As mobilized energy is discharged through body organs, a person may experience headaches, stomach aches, or nervous tensions – all of which are common symptoms of stress; however, a continuous or chronic

state of stress may aggravate such conditions as migraine, ulcers, colitis, impaired cardiovascular function, endocrine, and immune functioning (Kasl & Cooper, 1987; Schetter & Dolbier, 2011). These diseases can be viewed as the result of a continuous imbalance between the sympathetic and the parasympathetic autonomic nervous system due to ongoing problems and unresolved negative emotional states, such as anger and anxiety (Schubert et al., 2009).

Psychological effects

Research emphasised the essential role that chronic stress plays in the onset, maintenance and recurrence of psychopathology. Chronic stress was associated with symptoms of anxiety, panic, depression, overall negative feelings, and impaired cognitive functioning (Jenkins & Palmer, 2003). Experiences of stress, and in particular of chronic stress, appeared to be associated with individuals being more vulnerable to depression. Research findings were suggestive of a bidirectional relationship between chronic life stress and depressive symptoms (Brown & Resellini, 2011). Furthermore, the onset of major depression was significantly associated with both chronic and acute stress (Hammen, Kim, Eberhart, & Brennan, 2009).

It had also been well established that adverse experiences in a person's early life constitute a major risk factor for the development of psychopathology later in adulthood (Heim et al., 2002; Benjet, Borges, & Medina-Mora, 2010). Chronic stress was linked to higher vulnerability to developing such stress-related psychological problems as burnout, depression, and PTSD (Marin et al., 2011) as well as being linked with increased anxiety (Furutani, Tanaka, & Agari, 2011). In addition chronic stress in close relationships had been found to be predictive of individual's suicidal behaviours (Pettit, Green, Grover, Schatte, & Morgan, 2011). Neurobiological studies demonstrated that chronic stress in

childhood heightens cortisol levels and hinders hippocampal development, which had been found to be associated with borderline, dissociative identity, and post traumatic stress disorders (Marin et al., 2011; McEwen, 2007).

In summary, research provided evidence for the significant and potentially detrimental effects that chronic experience of stress may incite both psychologically and physiologically. Chronic stress had been recognised as a significant factor contributing to an array of conditions (Kopp, Skrabski, Székely, Stauder, & Williams, 2007; Marin et al., 2011). The connection between psychology and physiology suggests physical manifestations of mental experience (Kopp & Réthelyi, 2004). Counselling psychology and psychotherapy seek to address the problematic psychological aspects that predispose and maintain individuals' experience of stress. While there were a great variety of therapeutic models and approaches available, the three therapeutic theories that had been mentioned as the main, classic models of psychotherapy (Dryden & Mytton, 1999) were presented below to exemplify possible conceptualisations of chronic stress.

Counselling Psychology and Chronic Stress

All in all, counselling psychology and psychotherapy seek to alleviate individual's distress and to improve psychological resilience in the future. Here, distress would be defined as any kind of perceived pain or suffering. The ways in which various therapeutic models conceptualise distress informs and directs therapeutic practice. However, a specific focus based on the presenting issues was shown to notably improve effectiveness of treatment (Mace, 1995). This section aimed to address possible conceptualisations and focal areas of therapeutic work with clients presenting with chronic stress within frameworks of three distinct approaches.

Counselling objective

As noted in the British Occupational Health Research Foundation review (2005), 'stress' was frequently encountered as a diagnosis declared on medical certificates. The demand for counselling appeared to be significant enough for the NHS to offer widespread and accessible counselling services for people in need of emotional support not only in relation to diagnosed psychopathology, but also to assist with life problems and general stress (IAPT, 2010). However, from a practitioner's point of view, chronic stress can be an elusive phenomenon. Suggestions and recommendations in clinical guidelines mainly focused on prevention and management but did not provide clear conceptualisation with regard to underlying psychological processes. What complicated the clinical presentation of chronic stress was the potentially wide variety of psychological and physical symptoms, affects, and behaviours that clients may demonstrate (Jenkins & Palmer, 2003).

Counselling in general appears to aid stress management through building up clients' confidence and awareness, providing reassurance, assisting in coming to terms with feelings, promoting constructive reflection, assumption of responsibility for the self and decision-making, and encouragement to 'move on' (Kilfedder et al., 2010). Indeed, improved affect awareness and regulation helped individuals to challenge dysfunctional cognitions and reduced stress perceptions and psychological symptoms associated with stress (Bergdahl, Larsson, Nilsson, Riklund Ahlstrom, & Nyberg, 2005). Perhaps due to its brief and structured nature, CBT appeared to be the most common therapeutic approach to alleviating symptoms of psychological distress in workplace counselling, however, psychodynamic and person-centred counselling had also been employed (BOHRF, 2005; McLeod, 2010). A brief discussion of these therapeutic approaches is presented below.

Therapeutic theories

In cognitive behavioural theory the primary focus of intervention is placed upon cognition – mental processes through which individuals interpret life events and assign meaning as a psychological control mechanism that ensures adaptation (Alford & Beck, 1997). The underlying assumption of CBT is that thoughts mediate individuals' emotional response and strongly influence their behavioural reaction in a rather consistent manner, which over time becomes automatic (Dobson & Dobson, 2009). Thus previous experiences lay the foundation for perception, appraisal, and response (Winston & Winston, 2002). With cognitive behavioural theory centred on cognition, negative emotions and maladaptive behaviour are seen as a result of dysfunctional thinking and cognitive distortion (Hofmann, Asmundson, & Beck, 2013). The proposed cognitive behavioural interventions are directed towards modification of thought patterns and subsequently responses (Dobson & Dobson, 2009; Winston & Winston, 2002).

With regards to chronic stress, research provided evidence demonstrating that early cognitive patterns constituted a vulnerability for occupational stress and psychopathology later in life (Bamber & McMahon, 2008). Thus developmental factors appeared to be essential in people's cognitive makeup exerting influence throughout the lifespan. Symptoms of chronic stress could also point towards a lack of effective coping abilities due to early cognitive processing deficits (Wells, 2001). Dysfunctional attitudes and patterns that may develop due to social (Milner & O'Byrne, 2004) and dispositional (Beck et al., 2001) factors can contribute to and maintain chronic psychopathology (Pedrelli, Feldman, Vorono, Fava, & Petersen, 2008). With thought patterns and subsequent actions being the focus of cognitive-behavioural approaches, identification of the most relevant social and personality aspects could improve the effectiveness of therapeutic interventions.

Psychodynamic theory is often deterministic in assuming that human behaviour is caused by innate drives whether they are conscious or not (Dryden & Mytton, 1999). Freud proposed the tripartite structure of personality in which ego serves to strike a balance between instinctual drives of the id and punitive demands of super-ego (Freud & Gay, 1989). Psychological stress was viewed as an internal conflict between aspects of personality and the external world (Dryden & Mytton, 1999). In psychodynamic therapy anxiety was usually viewed as a sign of one's unconscious unacceptable feelings or desires being warded off by various defence mechanisms (Winston & Winston, 2002). In a way, they represented a discrepancy between individuals' actual experience and their perception of appropriateness of that experience. Object relations branch of psychodynamic therapy emphasised the importance of early relationships in the development of personality and defences. In fact, superego represented the learnt 'rules' that direct one's behaviour throughout the lifespan (Freud & Phillips, 2006).

Psychodynamic counselling focused on exploration of early experiences and conflicts in order to understand and correct problematic patterns in the present (Dryden & Mytton, 1999). While it is common in psychodynamic therapy to address conflictual feelings and drives with regard to the presenting issues, to the author's knowledge there was little research relating to chronic stress in particular. Empirical evidence of possible conflicts between individuals' personal and social perceptions could provide support and further insight into the theory. The link between upbringing and stress-related problems later in life had been established (Lupien et al., 2009; Wöller, Leichsenring, Leweke, & Kruse, 2012), however, identification and understanding of specific processes in psychosocial development essential for psychodynamic treatment required further research.

Person centred counselling represents another approach in psychotherapy. Person centred theory is rooted in phenomenology and is mainly concerned with each individual's personal and subjective experience of reality. The main pillar of person centred theory is the assumption of a 'real self' – the internal organismic core experience that allows humans to pursue their needs and potentialities (Rogers, 1967). However, human social need for warmth and acceptance drives individuals to evaluate and modify their experiences in accordance with the positive regard received from others (Gillon, 2007). Thus, psychological stress is viewed as an incongruence between organismic experiences of the real self and the self concept based on the conditions of worth that are dictated by significant others (Dryden & Mytton, 1999; Gillon, 2007).

Following the theory, person centred therapy is directed towards fostering congruence between the phenomenal experience and the conceptual self by promoting a more internal locus of evaluation and thus more innate perception (Clarke, 1994). Chronic stress, similar to other disturbances, would be viewed as a result of incongruence between one's inner experience and external conditions of worth (Rogers, 1967). These concepts seemed to be associated with social and dispositional characteristics of any given individual so that one could negotiate personal needs with social norms. Therefore, a better understanding of the role that social and personality factors play in chronic stress appeared to be a useful research direction for humanistic therapy too.

As described above, different approaches to psychotherapy emphasized different aspects of individual functioning. They all proposed psychotherapeutic ways of working with psychological distress, which followed logically from their conceptual assumptions. To reiterate, for psychodynamic theory it was the ego functioning that ensured that the needs of both superego and id were satisfied. Chronic stress would ensue from imbalance

between the two and the subsequent inner conflicts. In cognitive behavioural approaches thoughts and cognitions regulated emotional and behavioural responses. Hence, stress would be seen as an emotional response to dysfunctional thoughts and core beliefs. The real self and negotiation of conditions for its expression was the cornerstone of the person centred approach. Therefore, an inability to be true and genuine due to perceived or real external pressures would be expected to be quite stressful for the individual.

All these theories provide valuable insights and effective ways of conceptualisation that may be more or less relevant depending on a particular context and/or a presenting problem. It is noteworthy that despite differences in conceptualisation, personality dispositions and psychosocial factors appeared to be relevant to all the theories mentioned above. There was empirical evidence suggesting the overall comparative effectiveness of the therapies discussed earlier (Stiles, Barkham, Mellor-Clark, & Janice Connell, 2008). However, the knowledge about the effectiveness of therapeutic work specifically with chronic stress was rather limited. Further research on the relationships between personality, social factors and chronic stress might provide useful insights into the matter. In fact, if the focal points of development and maintenance of chronic stress were identified, therapeutic work with chronic stress could be developed to be more focussed and effective.

CHAPTER 2

INDIVIDUAL DIFFERENCES IN CHRONIC STRESS

The previous chapter provided a conceptual framework for chronic stress and attempted to locate it within the field of counselling psychology. The objective of this chapter was to critically discuss the previous literature and gaps in research in relation to chronic stress.

As discussed earlier personality dispositions and social factors appeared consistently in various psychotherapeutic theories. Indeed, the influences of nature and nurture have been debated since the early days of psychology. While extant literature commonly considered either personality or social factors in stress processes (e.g. Floyd, Pauley, & Hesse, 2010; Nachmias, Gunnar, Mangelsdorf, Parritz, & Buss, 1996; Vollrath, 2001), it was the author's intention to investigate the integrative and interactive effects of both personal and social dispositions in chronic stress. This project proposed an integrative approach to account for both nature and nurture by exploring the pathways to chronic stress. Consequently, it was proposed here that chronic stress might result from maladaptive patterns of interaction between personal and social dispositions in stress processing.

Although a substantial amount of research had investigated the direct effects between variables, it was only relatively recently that research had addressed indirect effects, such as interactions, which allowed for a deeper understanding of the nature of the relationships between variables. For example, Baumann, Kaschel, and Kuhl (2005) studied interactions between stress-related discrepancies in achievement motives in subjective well-being and psychosomatic symptoms, whilst Pedrelli et al. (2008) identified interactions between dysfunctional attitudes and perceived stress in chronic depression.

Interaction refers to an interplay between predictor variables that affects the outcome variable in a way that is different from the sum of the effects of individual predictors (Cohen, Cohen, West, & Aiken, 2013). As such, interactions provide a deeper and more all encompassing understanding of the processes as well as giving a broader overall view of the factors involved. It had been pointed out that it was hard to fully understand any factor without the context of other implicated factors (Kraemer, Stice, Kazdin, Offord, & Kupfer, 2001), which was the reason interactive effects may prove particularly useful in research.

This section would discuss the aspects of nature and nurture that could be sustaining the experience of chronic stress, namely personality and social dispositions. Personality represented personal and temperamental characteristics that were indicative of individuals' overall way of being. Upbringing and interpersonal bonding, on the other hand, characterised individuals' social beliefs and acquired ways of interpersonal relating. While these two factors clearly affected one another throughout development (Diem-Wille, 2011; John, Liu, & Cohen, 2011), in the interest of this study, personal dispositions would refer to the more internal, inborn temperamental traits that were representative of a person's own inclinations and needs. Social dispositions, on the other hand, would refer to the more external, socially learnt features of individuals' way of being. Together these aspects could be termed as individual dispositions and would be discussed further in this chapter in relation to chronic stress. It would be discussed how these individual dispositions may constitute vulnerability for higher stress reactivity and greater chronic stress. Nonetheless, the main objective of this project was to demonstrate how personal and social dispositions might interact with one another in ways that make individuals more susceptible to chronic stress.

Personality

While the definition of personality varies between researchers, in general, the notion of personality served to describe individuals with their consistent patterns of feelings, thoughts, and behaviour (John, Robins, & Pervin, 2008). Personality is a pattern of co-variation of dispositional traits that can be described in terms of five basic dimensions, commonly recognised as Neuroticism versus Emotional Stability (N); Extraversion or Surgency (E); Openness to Experience or Intellect, Imagination, or Culture (O); Agreeableness versus Antagonism (A); and Conscientiousness or Will to Achieve (C) (McCrae & Costa, 1997). A broad range of existing research on personality suggests that while personality traits are likely to change during adolescence and early adulthood, ultimately they become relatively stable (Hopwood et al., 2011).

Personality influences one's inclination towards selecting particular situations, thus shaping the degree of their stress exposure, which, accumulated over time, fosters and increases the effects of chronic stress (Vollrath, 2001). While the degree of stress appeared to be associated with one's perceptions of control over a given situation, nonetheless, the stressfulness of a situation would vary depending on the emotions that the situation brings about (Uliaszek et al., 2011). Indeed, negative emotions in general were known to be significantly associated with the experience of stress, therefore a reduction in negative emotions can be an effective strategy for reducing the overall experience of stress and symptoms associated with it (Bergdahl et al., 2005; McIntyre, Korn, & Matsuo, 2008).

Neuroticism is the personality trait that is most closely associated with the experience of negative emotional states (Costa & McCrae, 1990). Not only is it known as a predisposing factor for psychopathology, but also as a maintaining one as it enhances reactivity to stressors, especially in the presence of ongoing life strains (Brown &

Resellini, 2011). Not surprisingly, individuals who are higher in neuroticism experience daily conflicts more frequently (Bolger & Zuckerman, 1995) and have an increased propensity for emotional disorders, such as anxiety and depression (Brown & Resellini, 2011). Besides, individuals who score highly on measures of neuroticism are likely to engage in maladaptive coping strategies, such as disengagement, wishful thinking, escape avoidance, and emotional venting (Boyes & French, 2012; Matthews et al., 2006). Neuroticism has been found to be a predictor of both stressful life events and interpersonal problems in such a way that it predicts risk for marital problems, job loss, financial difficulties and social problems (Kendler, Gardner, & Prescott, 2003).

Conscientiousness, on the other hand, represents higher self-efficacy, effective goal setting, and lower tendencies to risk taking (Roberts, Kuncel, Shiner, Caspi, & Goldberg, 2007), which may be adaptive in diminishing experiences of chronic stress. Furthermore, the combination of high neuroticism and low conscientiousness is predictive of greater exposure to stressful situations (Ebstrup, Eplov, Pisinger, & Jorgensen, 2011). On the other hand, extraversion appears to be related to stress continuation, thus being potentially relevant to the issue of chronic stress. Assertiveness and sociability may act as protective factors, whereas withdrawal only perpetuates the experience of elevated chronic stress (Uliaszek et al., 2011).

Neuroticism, extraversion, and conscientiousness represent the three dispositional traits most closely associated with perceptions of stress (Ebstrup et al., 2011). However, openness to experience plays a role in stress regulation and in particular stress reactivity (Williams, Rau, Cribbet, & Gunn, 2009). Finally, whilst agreeableness does not appear to be a strong predictor of stress, more agreeable individuals seem to perceive higher stress than their less agreeable counterparts (Ebstrup et al., 2011).

Parental Bonding

Interpersonal experience

While personality dispositions appeared to be more prominent in shaping individuals' reactivity to stress, early relationships played a greater role shaping the response. Interpersonal experiences determined the interpretation individuals develop and the beliefs they hold about their capacity to cope with current stressful events. Early bonding experiences provide a foundation or a template for how one would perceive and experience the external world and, consequently, stressful life events.

John Bowlby (1988) introduced the concept of the secure base – a so called place of physical and emotional nourishment, comfort, and reassurance, which would allow a child to explore the outside world while knowing that he or she could always go back to the security of a caregivers' care. This required caregivers' encouragement of the child's autonomy, but at the same time it required availability and responsiveness when called upon (Bowlby, 1988).

Children, who experienced available, sensitive and warm parenting, and had the experience of a secure base normally developed a secure attachment (Bowlby, 1988). On the other hand, children of parents who failed to provide a secure base could be characterized by attachment anxiety, which involved intense feelings of fear, loss, and dependency, or attachment avoidance, which entailed distrust of intimacy and preference for autonomy (Maunder et al., 2006).

Parental bonding experiences greatly shaped a child's internal organization, which was, in a way, a consequence of the parental response and could be either emotionally empathic and in tune or out of step with the child (Sandler, 2003). While the former allowed the child to develop feelings of safety and controllability, the latter resulted in the

child experiencing a constant state of heightened anxiety. Anxiety could be adaptive if viewed as an unconscious mechanism of anticipation of dangerous consequences based on the past experiences (Sampson, 1990). Thus the experience of chronic stress can be seen as a continuous anticipation of dangerous outcomes and consequent need for defence.

Parental bonding and attachment would be interlinked with psychological and biological systems that regulate threat, stress response, and recovery. Social connection exerts physical and mental health benefits and serves as a protective factor when subjectively perceived as intimate and affectionate (Hale, Hannum, & Espelage, 2005; Seppala, Rossomando, & Doty, 2013). Furthermore, affectionate interactions enhance stress regulation and ameliorate stress reactivity (Floyd, Pauley, & Hesse, 2010; Floyd & Riforgiate, 2008). A wide range of research demonstrates how attachment is associated with stress reactivity (Nachmias, Gunnar, Mangelsdorf, Parritz, & Buss, 1996), emotional and behavioural understanding and self-regulation (Repetti et al., 2002), adjustment and well-being in stressful situations (Meredith, Ownsworth, & Strong, 2008), security in and style of interpersonal relationships (Fraley, 2002). Therefore, early experiences appear to be essential as they lay the foundation for future life experiences.

Parental bonding in particular can be seen as an important example of interpersonal experiences. The responses and expectations learned in early relationships provide a template for relatively stable and enduring patterns of intimate interpersonal relationships later in life (Maunder et al., 2006). Children growing up in families characterised by conflict, aggression, neglect, and lack of warmth and support had been shown to lack crucial self-regulatory and interpersonal skills, which later translated into lacking social support and being more vulnerable to maladaptive coping strategies, such as risky behaviours and substance abuse (Repetti, Taylor, & Seeman, 2002).

Belonging

Acceptance and belonging are essential needs that Maslow positioned in his hierarchy immediately after physiological and safety needs (Maslow, 1943). Affection and belongingness being fundamental drives (Baumeister & Leary, 1995; Maslow, 1943) guide individuals' actions and motivations in such ways that would allow them to experience those states to the fullest. Given the social nature of these needs, in order to fulfil them individuals may have to adjust their behaviour in accordance with social requirements by developing corresponding cognitive and behavioural patterns. While many of those patterns are adaptive and socially desirable (e.g. politeness, honesty), others may be dysfunctional (e.g. conformity, domination). Regardless of the objective value of such patterns, subjectively they still represent the means of attaining social acceptance. Perceived threat to social acceptance is likely to trigger a stress response in individuals.

To use Carl Rogers' language, one acquires certain 'conditions of worth' – the standards of other people that one as a child learns to have to live up to in order to be loved and accepted (Rogers, 1967). Utilizing Rogerian theory, if children perceive themselves as being recognised and loved only when they show achievement to their parents, achievement becomes central in the child's value system and represents the condition of their worth. On the other hand, if a child longs for recognition but feels ignored or unloved by their parents, interpersonal relations may become of central importance to them. While the former example may encourage excessive workload, unrealistic expectations, perfectionism, and insatiable ambition, the latter may result in need for social approval, perpetual attempts to please others, and sensitivity to criticism. While the behaviours in both examples originate from early relational experiences, the subjective value placed on

certain experiences determines which behaviour individuals would resort to in order to satisfy their needs.

The extant literature confirmed that individuals' expectations reflected their personal experiences in the past (e.g. Fraley, 2002; Maunder et al., 2006). Also, it seemed logical for individuals to assign more value and importance to personally relevant and significant phenomena (Huether, 1996; Schneider, 2008). What appeared to follow from these two assumptions was that individuals determined what was important for them based on their past experiences with other people. The value that one assigned to an experience can be great enough to elicit a behavioural change, i.e. over achieving or people pleasing. However, it was also known that such personally significant experiences could be stressful if perceived as threatening (Schneider, 2008). Therefore, it appeared reasonable that individuals would differ in their responsiveness to stress depending on what they learnt to be of the greatest personal value based on their previous experiences. Furthermore, one's conceptualization of the world around affected and shaped one's future experiences (Park & Gutierrez, 2013).

Indeed, a situation can only be stressful if it was perceived as such by a given individual (Boyes & French, 2012). Developing the examples given above, in the case of the achievement based values, events or situations that could possibly endanger the person's accomplishments and efficacy would also endanger that person's self-worth, thus proving to be highly stressful. However, the same events may not be perceived as stressful for the individual described in the other example. That person's self-worth was based on social approval while achievement per se was of relatively little value for them. However, it may be overwhelmingly stressful should that person felt that others disapproved of them or evaluated them negatively. Of course, these examples were over simplified; yet they

demonstrated how individuals' subjective construction of the world, which was rooted in personal dispositions and relational experiences, might affect their internal value system and consequently their experiences.

As mentioned earlier, in a social world individuals need to follow certain societal rules in order to fit into the community. This may require negotiation between personal desires and social demands. This kind of negotiation can be viewed as a process of cognitive and emotional evaluation and decision making that results in choosing a certain course of action. In a way, the meaning that individuals assigned to a contradiction between personal and social drives would determine their experience of it, including stressfulness (Dick, 2000). These meanings and assumptions develop through learning processes.

In summary, the experience of distress was associated with subjective meaning, which was constructed through social experiences and memories (Dick, 2000; Park & Folkman, 1997). This highlighted the importance of the interaction between personal and social factors, which at the end needed to be negotiated. This negotiation was achieved through the process of appraisal, which reflected how individuals evaluated and resolved conflictual (and thus potentially stressful) situations. A more detailed discussion of psychological functions involved in the process of appraisal and interaction between personal and social needs follows below.

Interaction

It was originally argued by Lazarus et al. (1985) that stress did not exist in the absence of the person-environment relationship, i.e. there was a constant interaction in which the environment affected the person and the person affected the environment. Indeed, it was the need to negotiate the discrepancies between personal desires and social

demands that could create stress. Appraisal process involved individuals constructing personal meaning by relating features of self to features of an encounter (Lazarus, 1999). Individuals made meaning out of life situations by making early automatic determinations of causality of events based on attributions which were rooted in their beliefs (Park & Folkman, 1997). It w would be important to differentiate between knowledge and appraisal. Whereas knowledge referred to the enduring beliefs or mental representations, appraisal was a dynamic process of evaluation of the relationships between self and the environment (Cervone, 2004).

The stress appraisal model identified cognitive appraisal and coping as the two processes that mediated stressfulness of the interactions between individuals and the environment (Folkman, Lazarus, Dunkel-schetter, Delongis, & Gruen, 1986). According to this model, cognitive appraisal was a process through which the person evaluated whether and how a particular encounter with the environment was relevant to his or her well-being (Folkman et al., 1986). Primary appraisal served to evaluate personal significance of an event, whereas in secondary appraisal the coping resources and strategies were assessed (Folkman et al., 1986; Schneider, 2008).

The role of subjective interpretations in a stress response was further emphasized given that humans can experience stress even in response to an imaginary scenario simply by associating that scenario with an expectation of stress (Huether, 1996; Kopp & Rethelyi, 2004). It had been argued that many psychological stressors were anticipatory in nature as they were based on expectations derived from memories (e.g., conditioned responses and the anticipation of threats, real or implied) or in specific predispositions (e.g., the threat of social rejection and negative social evaluations) (Lupien et al., 2009). Thus how one interpreted a situation largely depended on exposure to previous

experiences of a similar nature. This suggested that experiences of parental bonding would significantly determine how one interpreted events later in life.

As MacLeod and Cohen (1993) rightly point out, many real world events could be inherently ambiguous and open to interpretation. Beck's cognitive theory explained anxiety as the excessive and inappropriate threat appraisal in response to possibly innocuous events (Beck & Clark, 1997). Indeed, anxious individuals were significantly more prone to selectively impose threatening meanings onto ambiguous information (MacLeod & Cohen, 1993). Therefore, perception of stress could be significantly associated with one's pattern of managing the interaction between personal and social needs.

CHAPTER 3

PRESENT STUDY

Studies reviewed above provided evidence for the importance of both individual and social factors in shaping one's experiences. As discussed, idiosyncrasies in personality dispositions and early social experiences appeared to shape one's appraisal and reactions. The present study aimed to investigate how these aspects interrelate within the framework of chronic stress. It was proposed here to conceptualise chronic stress as maladaptive patterns of interaction between personal and social dispositions in stress processing. This project intended to identify these patterns of interaction by exploring the relationships between those variables.

With regards to practical application of these research findings, counselling psychology and psychotherapy could benefit from a better understanding of the pathways leading to chronic stress. In cognitive-behavioural therapy, the interplay between personality and social bonding may shed light on (dysfunctional) attitudes that maintain chronic stress through recurring stress reactivity in certain situations. Furthermore, a model of personality traits and learnt relational aspects within the context of chronic stress may explain and suggest effective avenues for therapeutic interventions.

Similarly, in psychodynamic therapy a clear model of personal and interpersonal factors in chronic stress can direct therapists towards the psychological conflicts that may not necessarily be explicit and/or conscious from the beginning. Such a focus can be essential for therapeutic success and efficiency in short-term and time-limited work. Finally, a model that accounts for personal dispositions and social experiences would assist humanistic therapies in identifying and reducing 'conditions of worth' and other rigid 'rules' which would be expected to be limiting and stressful for clients.

The extant literature provided essential knowledge and insight in relation to stress. However, there were also significant gaps in current research-relating to chronic stress. Following the discussion of the previous research literature and the gaps in research that instigated this study, the next section would address the formulation and description of the hypotheses that this study intended to investigate. First, an overview of this study's main hypothesis would be presented. This would be followed by a short discussion of the domains of stress, which would allow conceptualisation of several models that could target particular areas of stress with more precision. Finally a summary of research objectives and hypotheses would be provided at the end of this chapter.

General Model of Chronic Stress

There were two main factors that this study of chronic stress focused on – personality and parental bonding. These were the factors commonly mentioned in the therapeutic theories discussed earlier. Considering the importance of both personality traits as unique individual predispositions and parental bonding as the process of social learning and adaptation, it was hypothesised here that personality dispositions in interaction with parental bonding experiences were jointly associated with the experience of chronic stress.

The model described here represented a synthesis of all the elements discussed earlier and directly reflected the main operational definition and assumption of this study. As outlined it was proposed that chronic stress might result from maladaptive patterns of interaction between personal and social dispositions in stress processing. This assumption was the foundation for the main hypothesis that instigated this study. Therefore, what this main hypothesis described would be further referred to as the general model of chronic stress. It would be so entitled given the broad spectrum of individual differences that it encompassed.

The general model of chronic stress would include all five dimensions of personality (extraversion, emotional stability, openness, conscientiousness, and agreeableness) and both dimensions of parental bonding (affection and control). It would be hypothesised that there was a predictive association, or a patterns of interaction between personality traits and early bonding affecting stress reactivity and subsequently chronic stress. Another hypothesis would suggest the interaction effects between the variables of individual differences and chronic stress. Thus, individuals who exhibited a combination of certain personality traits and bonding aspects would be more likely to experience greater levels of chronic stress. On the other hand, individuals with reverse combinations would have experienced a buffering effect of such interactions between personality traits and experiences of parental bonding reporting lower chronic stress.

In the light of all of the elements identified in the hypothesis and involved in the general model discussed in depth earlier, this section was kept concise. The following section, however, would address the domains within the field of stress, which motivated the development of more precise models based on the main model defined here, which would be discussed further. Then the final hypotheses would be formulated and described for the general model of chronic stress as well as for the derivative models as discussed below.

Stress Domains

With regard to stress processing, there were existing theories that conceptualise stress as a negative relational experience characterised by the inability to attain necessary levels of affection (Steverink, Veenstra, Oldehinkel, Gans, & Rosmalen, 2011). Indeed, social belongingness being fundamental for individuals (Baumeister & Leary, 1995), may not only affect explicit behaviours, but also implicit beliefs and values. Given the relative

stability of personal values in adults (Bardi, Lee, Hofmann-Towfigh, & Soutar, 2009), recurring perceived threat to those values may be a contributing factor for chronic stress. The conditions, which one had learnt to associate with receiving most affection and acceptance, would then bear most personal significance, and as such would have a great potential for repeatedly provoking stress reactions.

The situations that can be potentially stressful would vary greatly as a function of a range of factors including age. For example, the main stress domains for adolescents may include education, work, family, social functioning, financial, health, and achievement (Ames et al., 2005; Hankin, Mermelstein, & Roesch, 2007); whereas job, finance, home, health, family, romantic relationship, friends, academic, and negative life events represent some of the stress domains identified for adults (Calicchia & Graham, 2006; Sprague, Verona, Kalkhoff, & Kilmer, 2011). While stressful situations may arise in any domain of life, it may be useful to differentiate between the stress domains in order to establish clearer pathways between individual differences and stress reactivity. The division of stressors into those which are interpersonal or non-interpersonal (e.g. Pettit et al., 2011; Rudolph & Hammen, 1999) appeared to be one useful way of categorizing a wide array of possible stressors. The research literature has also highlighted that stress usually gravitates towards either social (e.g. Lee, Draper, & Lee, 2001; Lepore, Evans, & Schneider, 1991) or occupational domains (Elfering et al., 2005; Kilfedder et al., 2010).

In sum, it appeared reasonable for conceptual purposes to divide stressors into social and achievement related. In relation to this conceptual division, the main theoretical model proposed here can be split into two derivative models that were more focused and precise. The social model of chronic stress focused on social values and interpersonal processes. The achievement model, on the other hand, emphasised values associated with

status and accomplishment. As discussed previously, the interactions between individual differences in personality and interpersonal bonding experiences would reveal the pathways leading to chronic stress. Hence these two models aimed to explain differences in chronic stress as patterns of interaction between personal and social dispositions in social and achievement stress processing. Furthermore, the chronicity of stress was assumed as a feature of the relative stability of such patterns in light of the stability of personality traits and of relational styles.

Social model

The need to form lasting, meaningful, and positive interpersonal relationships can be viewed as a drive that significantly influences individuals' affect, cognition, and behaviour (Baumeister & Leary, 1995). Both men and women alike have a strong need for affection, a lack of which may be detrimental to mental and physical health (Steverink et al., 2011). Perceived lack of affection may make individuals more sensitive towards affection related encounters, as fear of exclusion has been shown to be a major source of emotional distress (Seppala et al., 2013). Hypothetically, it could be inferred that any situation related to interpersonal negotiation, social conflict or evaluation would then be particularly stressful because of the social emphasis. Affection would become a heightened need and a sensitive spot fuelled by the fear of exclusion. The presence of upsetting memories of past maladaptive attachments affects further social interactions generating anticipatory stress and anxiety (Blane, Brunner, & Wilkinson, 1996; Fraley, 2002). The increased sensitivity to interpersonal situations would thus make such encounters highly stressful.

Individuals tend to have certain predominant patterns of thinking. It was known that individual differences in appraisal (Ebstrup, Eplov, Pisinger, & Jorgensen, 2011;

Smith & Kirby, 2009), reactivity (Bolger & Zuckerman, 1995; Diehl & Hay, 2010), and resilience (Schetter & Dolbier, 2011) moderated the experience of stress. Heightened sensitivity to interpersonal encounters may be affected by beliefs about one's self worth based on past feedback from others (Kopp & Réthelyi, 2004; Park & Folkman, 1997), that was, inferring and believing that one was not good enough based on lack of affirmations from significant others. This formed a corresponding way of thinking, which then continuously affected further social situations by recreating the early attachment pattern (Fraley, 2002). Hence individuals who had experienced lack of attention and inferred lack of self worth were likely to experience increased stress reactivity through striving for affection but believing they were unworthy of it.

Personality may further increase social sensitivity. The following would be brief examples of personality research findings in relation to social and interpersonal types of stress. Higher neuroticism was associated with self-consciousness and impulsivity (McCrae & John, 1992), stronger perception of threat and negative appraisal (Vollrath, 2001), anxiety (Noftle & Shaver, 2006; Robins, Caspi, & Moffitt, 2002), and relationship dissatisfaction (Robins et al., 2002) – all of which may add to the stressfulness of interpersonal experiences. On the other hand, such aspects of extraversion as sociability and warmth (McCrae & John, 1992) may promote social involvement and feelings of belonging, while assertiveness may increase an individual's ability to express and negotiate their needs. Low extraversion, however, had been shown to be associated with interpersonal problems, social avoidance, exclusion, and rejection (Newcomb, Bukowski, & Pattee, 1993; Ozer & Benet-Martínez, 2006; Robins et al., 2002), which would be expected to augment loneliness and isolation.

Another personality trait – agreeableness – appeared very relevant in the interpersonal context. Agreeable individuals were characterised by trustfulness and helpfulness (Lee-Baggley, Preece, & Delongis, 2005); whereas those low in agreeableness were likely to be described as more hostile, self-centred, and jealous (McCrae & John, 1992) and more likely to experience social rejection and conflict (Lee-Baggley et al., 2005). While higher agreeableness was generally associated with more positive emotionality and coping (e.g. Lee-Baggley et al., 2005; Ozer & Benet-Martínez, 2006), agreeableness could also be viewed as social pleasing and placation, which, however, was not well described in the personality literature. In the context of this study, it was hypothesized that higher agreeableness may be associated with higher stress due to increased conflict between personal drives and perceived need to please others.

In sum, the social model of chronic stress proposed here aimed to explain chronic stress as a maladaptive pattern of interaction between personal and social dispositions in social stress processing. It was hypothesized that individuals who reported their bonding experiences to be unaffectionate and who exhibited such personality dispositions as lower agreeableness, higher neuroticism, and lower extraversion would show significantly higher reactivity to social stress and to the overall experience of chronic stress. On the other hand, individuals who described their early bonding experiences as affectionate and whose personality is characterised by higher agreeableness, lower neuroticism, and higher extraversion were hypothesized to show lower social and overall chronic stress.

Achievement model

The need for achievement also bore an interpersonal focus as individuals exhibit the need for validation and social recognition in their endeavours – approval being a prerequisite for social acceptance (Baumeister & Leary, 1995). It was also firmly rooted

in early social experiences. It had been shown that parental confirmation (for example, listening, engaging, and acknowledging feelings) and affection (for example, expression of warmth, love, and appreciation) promoted feelings of self-worth, personal value, and well being (Floyd et al., 2005; Schrodt, Ledbetter, & Ohrt, 2007). However, if affection was lacking, children might have been actively seeking alternative ways of attaining attention and approval.

It could common for children to use achievement as the means of proving their worth to their parents and as an attempt to attain approval and affection (e.g. Assor & Tal, 2012; Assor, Vansteenkiste, & Kaplan, 2009). Nonetheless, parental conditional regard (or controlling parenting), defined as the perception of parental affection and appreciation being dependent on a child's attainment of parentally valued outcomes, only resulted in vacillation between feelings of grandiosity after success and self-derogation and shame after failure and compulsive over-investment in the future (Assor & Tal, 2012, p.249).

Parenting that promoted restriction and conformity was linked to greater perceived stress and poorer mental health in children (Schrodt et al., 2007). Controlling parenting and educational strategies, such as evaluation, incentive, and surveillance, had been shown to reduce intrinsic motivation and promote extrinsic motivation, which was associated with negative affect, maladaptive cognitive styles, and perceptions of helplessness and ineptitude (Boggiano, 1998). Motive achievement orientation refers to the level of congruence between explicit goals and implicit motives and had been found to be associated with health and well-being (Baumann, Kaschel, & Kuhl, 2005). These researchers further proposed that motive incongruent achievement orientation can be an additional source of stress (Baumann et al., 2005).

Parental expectations and values become internalised and used for self direction later on in life (Lazarus, 1999). In this manner one's self worth becomes closely linked with social feedback and internalised expectations. It was perhaps not surprising that the belief that one's personal worth and the possibility of attaining affection depends on one's achievements, fostered extreme self-evaluation (Assor & Tal, 2012). Perpetual self-evaluation and attempts to measure up to certain standards would be expected to significantly augment experiences of stress. Besides, the acquired habit of using achievement as the means of proving self-worth can translate in adulthood into pursuit of social status. Thus, social status can become a reflection of one's personal achievements becoming associated with attainment of social approval and acceptance (Steverink et al., 2011).

In relation to individual differences in personality traits, longitudinal studies linked childhood measures of conscientiousness, neuroticism, and openness to experiences to occupational success later in life (Ozer & Benet-Martínez, 2006). Conscientiousness was characterised by reliability, responsibility, and organisation (McCrae & John, 1992). In previous research conscientiousness had been repeatedly found to be predictive of performance, while extraversion and low neuroticism were linked to satisfaction and commitment (Ozer & Benet-Martínez, 2006). Considering these findings in the context of stress, it was possible to hypothesize that the high conscientiousness needed for good performance may translate into high stress if the performance falls short of one's expectations. Furthermore, as low extraversion and high neuroticism were associated with negative affect and burnout (Ozer & Benet-Martínez, 2006) these traits may have exacerbated stress and reinforced its chronicity.

As shown earlier social bonding and personality significantly shaped individuals' perceptions and beliefs (Assor & Tal, 2012; Fonagy, Gergely, & Target, 2007; Ozer & Benet-Martínez, 2006). As a result, it was hypothesised here that there may be a pathway from personality and parental bonding to achievement related stress reactivity to chronic stress. Rooted in the general model of chronic stress, the achievement model of chronic stress considered chronic stress to result from the continuous experience of maladaptive patterns of interaction between personal and social dispositions in achievement stress reactivity.

Since overprotective and controlling parenting was likely to result in the perceived social pressure for achievement (Assor & Tal, 2012), it was hypothesised that this type of social bonding would be predictive of achievement stress reactivity and subsequently of chronic stress. Furthermore, based on the literature reviewed, it was hypothesized that such personal dispositions as high conscientiousness and low emotional stability would also be associated with high reactivity to achievement stress and overall chronic stress. On the other hand, individuals characterised by lower conscientiousness, higher emotional stability and those who described their early bonding experiences as less controlling were expected to report lower achievement and overall chronic stress.

Summary of the present study

Models

In summary, in this study it was proposed that chronic stress resulted from maladaptive patterns of interaction between personal and social dispositions in stress processing. The general model of chronic stress proposed here reflected this theoretical assumption. Personality traits and social bonding experiences were hypothesised to be associated with stress reactivity and chronic stress. More precisely, this study intended to

investigate the interactions and the pathways between the identified elements in order to test the hypothesised theoretical models of chronic stress.

In addition to the main model of chronic stress as mentioned above, two further models with a narrower focus were developed based on the extant research in stress domains. These two models, social and achievement models of chronic stress, were rooted in the basic human need for affection and social belonging. The social model was concerned with interpersonal experiences and the acquired patterns of eliciting affection and avoiding rejection (for example, emotional closeness and physical contact) when interpersonal connection was perceived to be at stake. By way of contrast, the achievement model emphasised the need for status and accomplishment as the learnt means of attaining social approval and recognition, in particular when achievement was perceived as a means of control. The diagram of the general model of chronic stress was presented in Figure 1. The diagrams of the social and the achievement models were presented in Figures 2 and 3, respectively.

Gender

To conclude the overview of the models presented here, it would be important to mention gender differences. In general, females had been shown to be more emotionally and physiologically reactive to social rejection and interpersonal problems than males (Shih, Eberhart, Hammen, & Brennan, 2006; Stroud, Salovey, & Epel, 2002). Males, on the other hand, appeared to be more reactive to achievement related stressors (Hankin et al., 2007; Stroud et al., 2002). Furthermore, females had been shown to be better able to substitute a status loss with increased affection (Steverink et al., 2011). However, it would be worth noting that while there were gender differences in stress domains, reactivity, and coping reported in various studies, both affection and status related needs would be basic

human needs equally applicable to both genders. In fact, there was research evidence demonstrating the detrimental effects of interpersonal stress on physical and mental health of males as much as of females (Steverink et al., 2011).

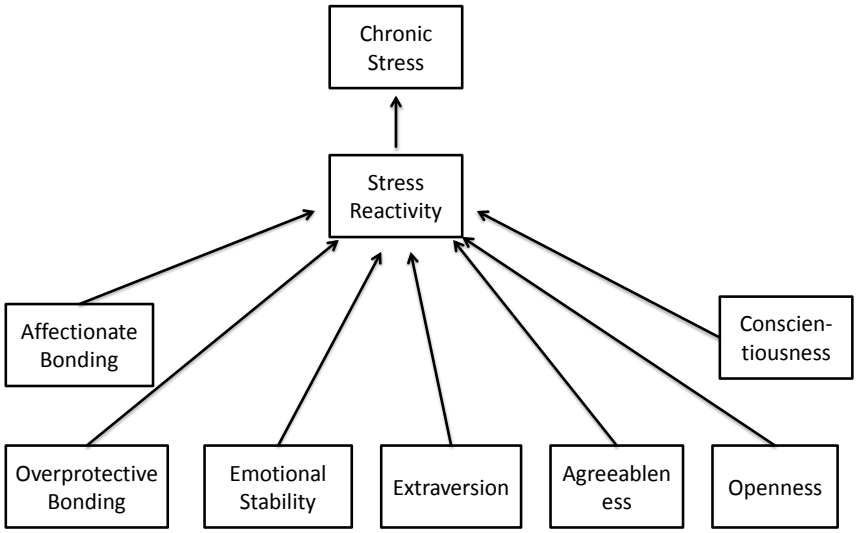

Figure 1. General Model of Chronic Stress

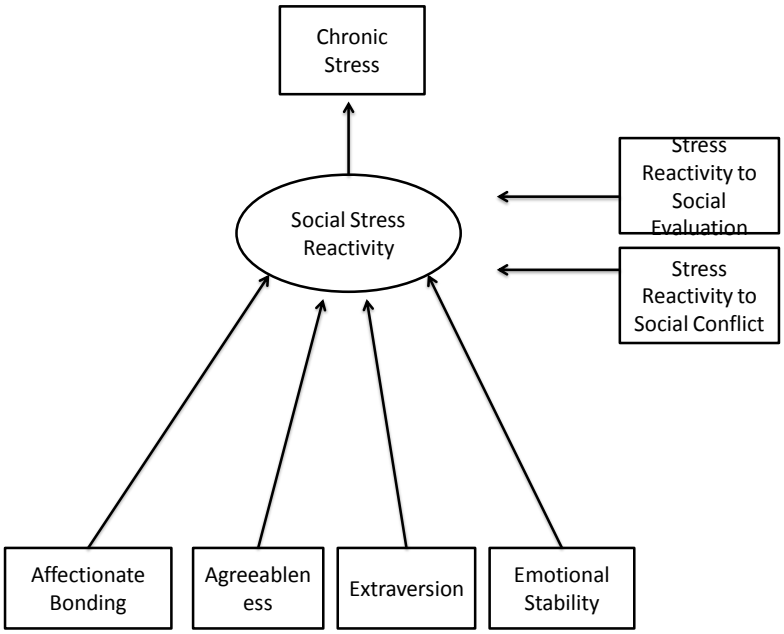

Figure 2. Social Model of Chronic Stress

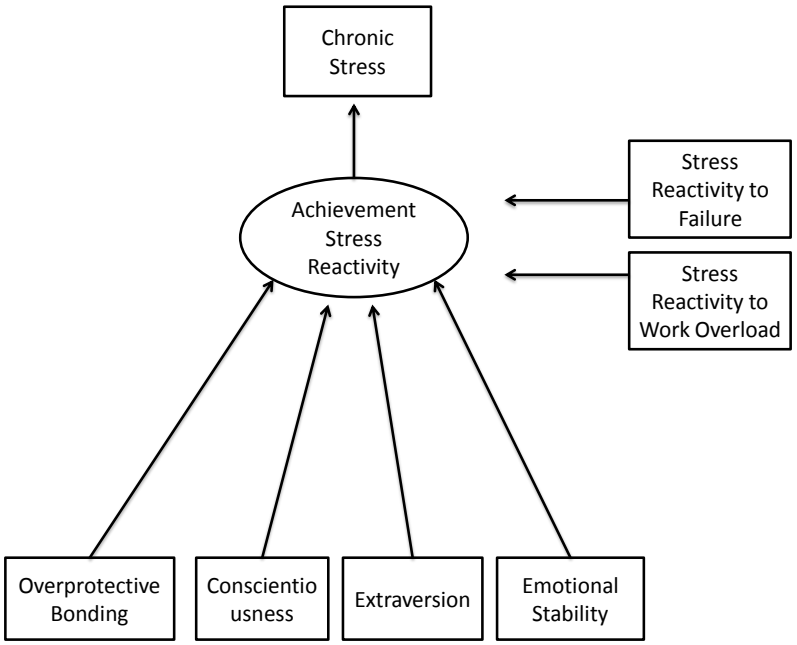

Figure 3. Achievement Model of Chronic Stress

CHAPTER 4

METHOD

Hypotheses

There were three main areas investigated in this study: a general model of chronic stress, a social model of chronic stress, and an achievement model of chronic stress. Gender differences between social and achievement stress reactivity would also be examined. The hypotheses that this study aimed to investigate are as follows.

The first research question would address gender differences in social and achievement reactivity in order to lay the foundation for the hypothesised social and achievement models of chronic stress.

Hypothesis 1. Women score higher than men on social stress measures of reactivity, while men have higher scores than women in achievement stress reactivity.

The second research question was formulated with regard to the overall model, or what would be referred to as the general model of chronic stress. It addressed the role of parental bonding and personality variables in stress reactivity and chronic stress. It was hypothesised that parental bonding and personality variables predicted stress reactivity and chronic stress.

Hypothesis 2. The interactions between parental bonding and personality variables predict stress reactivity and chronic stress.

Hypothesis 3. There is a model that can explain chronic stress through pathways from parental bonding and personality variables to stress reactivity and to chronic stress.

The social model proposed in this study was described by the third research question. The model aimed to investigate if affectionate bonding, extraversion,

agreeableness, and emotional stability predicted social stress reactivity and consequently chronic stress.

Hypothesis 4. The interactions between affection in parental bonding, extraversion, agreeableness, and emotional stability predict social stress reactivity and chronic stress.

Hypothesis 5. There is a social model of chronic stress comprised of pathways from affection in parental bonding, extraversion, agreeableness, and emotional stability leading to what can be described as a social stress reactivity construct (comprised of stress reactivity to social conflict and stress reactivity to social evaluation), which further leads to chronic stress.

Finally, the fourth research question investigated the achievement model of chronic stress. It aimed to examine the role of controlling parenting, conscientiousness, and emotional stability in predicting achievement stress reactivity and chronic stress.

Hypothesis 6. The interactions between controlling parental bonding, conscientiousness, and emotional stability predict achievement stress reactivity and chronic stress.

Hypothesis 7. There is an achievement model of chronic stress in which pathways from controlling parental bonding, conscientiousness, and emotional stability lead to so called achievement stress reactivity construct (comprised of stress reactivity to failure and stress reactivity to work overload), which then predicts chronic stress.

Procedure

The research project was advertised as a chronic stress investigation. It was an on-line only study; hence all the data was collected electronically. The participants were recruited through both the university SONA system and social networking services (i.e. Facebook and Twitter). The questionnaires used in this study were uploaded securely

online to ensure confidentiality. All the participants were required to digitally sign the standard electronic informed consent form prior to any data collection. Participants were asked to confirm they were over 18 years old when they consented to take part.

Participants were notified that participation entailed filling out questionnaires that enquired about their current well-being, stress experiences, personality characteristics, life regard and attitudes, and childhood relationships. The estimated time needed to complete the questionnaires was approximately 45 minutes. The participants were made aware that they could stop or withdraw at any time without penalty. Furthermore, students were notified that withdrawal from participation would not affect their studies or the research course credit they were receiving for participating in the research of their choice. Once data was gathered, the participants were debriefed and thanked for their participation. The ethical standards of research were strictly followed and the procedure approved by the ethics committee of Roehampton University (see Appendix 2). The debriefing form can be found in Appendix 3.

Measures

Chronic Stress

A chronic stress questionnaire was used to measure participants' subjective experiences of chronic stress. The questionnaire inquires about general experience of stress in the past six months and in the last year. Participants were asked to rate their stress levels on a scale of 1 to 10, where "1" is "not stressed at all" and "10" is "extremely stressed." To the author's knowledge there is no established and validated self-report measure of chronic stress in the English language, this simple scale was used to assess self-reported perception of chronic stress in one's life. As the scale had not been utilized before, reliability scores could not be compared across studies. However, according to the accepted research

standards (Cronbach, 1951) the measure showed satisfactory reliability (Cronbach's alpha), estimated as 0.86. The scale can be found in Appendix 4.

Unlike the Chronic Stress questionnaire, all the remaining questionnaires represented well established measures commonly described in the research literature. Analyses of reliability conducted on the scales utilized demonstrated high reliability in accordance with the estimates provided in the corresponding questionnaire manuals. The names of scales, number of items, and reliability estimates are presented in Table 1. The subscales of the questionnaires were also tested and were found reliable in accordance with the accepted standards (Cronbach, 1951).

Stress Reactivity

Stress reactivity was utilised to evaluate how particular individual differences (i.e. personality traits and parental bonding aspects) were associated with stressfulness of life events and the overall experience of chronic stress. The Perceived Stress Reactivity Scale (PSRS) (Schlotz, Yim, Zoccola, Jansen, & Schulz, 2011) is a self-assessment measure of reactivity to stressful life events. Each item consists of a situation description and requires the participant to choose their most likely reaction from the options describing potential reactions to the situation. An example of a question is "When I argue with other people…" and the possible responses include "I usually calm down quickly", "I usually stay upset for a long time", and "It usually takes me a long time to calm down." The PSRS is a 23-item questionnaire with 5 subscales and 1 overall scale. However, the subscale 'Prolonged Stress Reactivity' was not utilized in the present study due to a possibility of confounding with the Chronic Stress measure. The research literature indicates that the scales have good consistency and test-retest reliability: Cronbach's alpha for subscales ranges between .70

and .80, while internal consistency for the PSRS total score exceeds .80 across samples (Schlotz et al., 2011).

Parental Bonding

The Parental Bonding Instrument (Parker, Tupling, & Brown, 1979) is a 25-item retrospective measure of perceived parenting that evaluates both maternal and paternal behaviours. The measure presents good psychometric properties with Cronbach's alpha estimated as .76 and .63 for the care and the control scales (Parker et al., 1979). In the present study, reliability was estimated as .86, which agrees with more recent studies that utilized the instrument (e.g. Safford, Alloy, & Pieracci, 2007). Participants are asked to recall their experiences with each parent separately in the first 16 years of their lives. Then the participants are asked to rate the descriptive items in relation to each parent as "very like [my mother/my father]", "moderately like," "moderately unlike," and "unlike." Sample items are "Tried to control everything I did" and "Frequently smiled at me." The measure is comprised of two scales termed 'care' and 'control' or 'overprotection' that measure fundamental parental styles as perceived by the child.

The Big Five - IPIP

Personality was assessed by the Big Five scales drawn from the International Personality Item Pool (IPIP) (Goldberg, 1990). The instructions request the participants to describe themselves as they generally are now, not as they wish to be in the future, as they honestly see themselves in relation to other people they know of the same sex and roughly of the same age. The items are rated on a 1–5 Likert scale ranging from ''very inaccurate'' to ''very accurate.'' The questionnaire has been widely used and shows good reliability and validity estimated around .80 across studies (Goldberg, 1999; Goldberg et al., 2006).

Table 1
Description of questionnaires, reliability estimates, and number of items

Scale	*Cronbach's Alpha*	*N of items*
Chronic Stress	.86	2
Perceived Stress Reactivity Scale (Schlotz et al., 2011)		
Reactivity to Work Overload	.77	5
Reactivity to Social Conflict	.68	5
Reactivity to Failure	.70	4
Reactivity to Social Evaluation	.67	5
Parental Bonding Instrument (Parker et al., 1979)		
Parental Bonding - Affection	.93	24
Parental Bonding - Control	.90	26
The Big 5 (Goldberg, 1990)		
Big 5 - Extraversion	.89	10
Big 5 - Agreeableness	.78	10
Big 5 - Conscientiousness	.77	10
Big 5 - Emotional Stability	.84	10
Big 5 - Openness	.79	10

Data analysis

Data Preparation

Missing values

The cases with more than 10% of overall values missing were deleted completely. Little's (1988) Missing Completely at Random test was performed to check whether there was a pattern in the missing data. The analysis demonstrated that the missing data was random ($p > 0.05$), therefore imputation could be used to estimate the missing data. The cases with less than 10% of overall values missing were estimated using the stochastic imputation method as suggested in the methodology literature (Allison, 2003; Schlomer, Bauman, & Card, 2010). Stochastic imputation is the recommended procedure as even though it is an approximation technique, it maximizes statistical power thus improving the precision of analytical predictions unlike the deletion methods (Schlomer et al., 2010). Expectation maximization estimation technique was used for each of the instruments separately for the precision of estimation in order to replace the missing data. These procedures were conducted using SPSS v 15.0.

Recoding and scales

Negative items were re-coded in accordance with the corresponding manual guidelines. Subscale totals were computed through the summing of items in accordance with corresponding manual guidelines. Scales and subscales of the questionnaires employed in this study were tested for reliability and factor structure. As predicted by previous research and confirmatory studies, the scales showed adequate reliability and factor structure.

Normality

Normality of data distribution was assessed using Kolmogorov-Smirnov and Shapiro-Wilk tests and the corresponding scatter plots. The results demonstrated that not all of the scales contained normally distributed data (see Table 2). For example, the Chronic Stress and Stress Reactivity subscales were not normally distributed, whereas the Stress Reactivity total and most of the Personality subscales were. Therefore, to address the issue of non-normality, Maximum Likelihood parameter estimates with standard errors and a mean-adjusted chi-square test (MLM) were chosen in accordance with the research literature guidelines (Muthen & Muthen, 2010). MLM estimator offers the most robust solution for the partially not normally distributed data (Muthen & Muthen, 2010). Therefore, the robustness of the MLM minimises bias of the results and provides more reliable estimations, which is necessary in the present dataset. A robust estimation techniques also protect the data from the effects of outliers without the need of removing them (Muthen & Muthen, 2010; Schumacker & Lomax, 2004).

Table 2
Tests of Normality

	Kolmogorov-Smirnov			Shapiro-Wilk		
	D	*df*	*p*	*W*	*df*	*p*
Chronic Stress	.11	199	.00	.97	199	.00
Perceived Stress Reactivity Scale						
SR Prolonged	.13	199	.00	.96	199	.00
SR to Work Overload	.11	199	.00	.96	199	.00
SR to Social Conflict	.10	199	.00	.97	199	.00
SR to Failure	.20	199	.00	.94	199	.00
SR to Social Evaluation	.12	199	.00	.96	199	.00
SR Total Score	.06	199	.08	.99	199	.46
The Big 5						
Big5 Extraversion	.06	199	.08	.99	199	.05
Big5 Agreeableness	.11	199	.00	.95	199	.00
Big5 Openness	.07	199	.04	.99	199	.18
Big5 Conscientiousness	.08	199	.00	.98	199	.02
Big5 Emotional Stability	.06	199	.08	.99	199	.64
Parental Bonding Instrument						
PB Parental Care	.07	199	.02	.97	199	.00
PB Parental Control	.05	199	.20	.99	199	.06

Note. PB – Parental Bonding; SR – Stress Reactivity.

Statistical Analyses

Regression

Multiple regression per se is a statistical method used to identify the unique effects of independent variable(s) on a dependent variable keeping the rest constant (Cronk, 2008; Drapper & Smith, 1998). It makes it possible to identify which of the possible variables are in fact predictive of the dependent variable. In this study multiple regression analyses were used to investigate and identify not only the independent but also the interaction effects that significantly predicted the dependent variables in accordance with the hypotheses. These analyses enabled a more precise investigation of interactions between the variables, whereas broader models of the relationships were assessed through pathway analyses in structural equation modelling.

Interaction effects

Interaction effects were investigated in this study. Interaction variables were calculated by multiplying centred means of the continuous independent variables. Multiple regression analyses were carried out using ENTER method, in which parental bonding variables were entered in the first step, personality variables were entered in the second step, and all possible interaction variables between parental bonding and personality variables were entered in the third step following the procedure outline in literature (Baron & Kenny, 1986).

Structural Equation Modelling

Structural Equation Modelling (SEM) is a statistical procedure that allows estimation of causal relationships and pathway identification (Raykov & Marcoulides, 2006; Schumacker & Lomax, 2004). SEM also allows better statistical control over

distinguishing between variables and the relationships among them by controlling for common causes (Kline, 2010). As there are multiple variables that the present hypotheses involve, SEM is a superior statistical approach as it allows to simultaneously evaluate unique contributions of each of the variables keeping a particular model constant (Alavifar, Karimimalayer, & Anuar, 2012). Thus, SEM is the best technique for analysis of raw quantitative data in order to organise it into a functional model. Furthermore, with SEM all relevant predictors can be included in the analysis thus safeguarding against a specification error and bias in results (Kline, 2010). Therefore, with the data obtained on parental bonding, personal dispositions, stress reactivity, and chronic stress, SEM would be used to test causal hypotheses with regard to chronic stress. As the aim of this study is to explore and construct models of chronic stress, SEM analyses would be used to explore the relationships between variables and to test the suggested hypotheses.

SEM is based on the analyses of variance and covariance structures, which were utilized to assess the goodness of fit of a model, i.e. how well a proposed structure of variances and covariances resembles the one that is found in the data. The reliability of the best fitting model was estimated with chi-square tests of model fit (Muthen & Muthen, 2010). Maximum likelihood estimation in SEM facilitates parameter estimation for datasets with missing data (Schumacker & Lomax, 2004). As the missing data in this study needed to be estimated, maximum likelihood estimation method was used to explore and further develop the models. Furthermore, SEM allows estimation for both observed and latent variables. One of the assumptions of SEM is the absence of missing data, which was addressed as discussed earlier. Other assumptions underlying SEM analyses include an association between the variables and the directionality of them, absence of extraneous or

confounding variables, and knowledge of data distribution form (Kline, 2012) all of which were satisfied in the present study.

Analyses were conducted using MPlus v6 (Muthen & Muthen, 2010). A range of fit indices generated by MPlus were consulted in data analyses. The root mean square error of approximation (RMSEA) indicated a reasonable error of approximation with a decrease in value for increasingly good fit (Schumacker & Lomax, 2004). Given the presence of latent variables in the model, Comparative Fit Index (CFI) and Tucker-Lewis Index (TLI) were used to determine the model fit through comparison of the tested model with a null model (1.00 indicates a perfect fit, values around 0.95 indicate a good fit) (Schumacker & Lomax, 2004). Measurement invariance of factors was assessed using loglikelihood difference tests (Muthen & Muthen, 2010). Mplus software has been shown to have effective and reliable in-built procedures for fixing only the necessary observed variables (Raykov & Marcoulides, 2006), therefore, given the exploratory nature of the study and the aim of understanding the interrelations between personality and social aspects and stress processes, there was no need to fix any additional parameters within the investigated models.

Drawing from both the literature and the clinical experience of the author a number of causal hypotheses were proposed and tested. Given the tentative nature of this novel approach to understanding chronic stress and its contributing factors, the possibility of type I and type II of statistical errors was balanced by setting alpha at <.05 level. Subsequent studies with better-established parameters would need to address this issue with more precision. The process of testing of the hypothesised models is sequentially described and summarised in the tables provided in the results section.

As common in SEM, modifications needed to be made on the basis of preliminary exploratory results. The procedure for making modification consisted of several stages. First Chi-square and RMSEA estimates were checked in order to determine the model's goodness of fit. If the model needed to be adjusted, modifications suggested by the modification indices and statistical analyses of individual parameters were considered. Then the research literature was consulted with the aim of locating and understanding possible adjustments within the field of previous studies. Finally, rooted in previous research findings and statistical indications derived from the analyses, modifications were implemented and the new model was tested. The procedure could be repeated several times until a good model fit was found.

CHAPTER 5

RESULTS

Data

Sample

After the data from 8 participants was removed completely due to the number of missing values, the final sample consisted of 244 participants (80% female, 20% male) recruited both from the community and student populations in the UK. The age of participants varied from 18 to 68, with the mean age being 23 years old. English was the first language for 69% of the sample. With regard to ethnicity, 56.1% were White European, 8.7% Mixed, 19.3% Asian, 10.6% black, and 5.3% identified as other. The occupation distribution of the sample was as follows: 85.7% of students, 10.7% employed, 2.5% self employed, 0.8% stay home mother/father, 0.4% unemployed.

Descriptive statistics

Frequency analyses were conducted for all the scales and subscales utilized in this study. The complete range of chronic stress values was represented varying from 2 (minimum) to 20 (maximum). The mean value of chronic stress was 12.95, median was 13.0, mode was 13.0, with standard deviation of 4.3, skewness of -0.4, and kurtosis of -0.425. The Openness subscale of the Big 5 was out of the range of acceptable kurtosis values. Although this particular scale violated the assumption of normal distribution, it was still acceptable in analyses through utilization of MLM estimation (as discussed earlier) which does not assume normal distribution of data. All the remaining scales showed satisfactory distribution as shown in a summary Table 3.

While it was not possible to compare the means of the chronic stress measure to other research, it appeared that the sample was somewhat chronically stressed, with the mean falling beyond the halfway point of the Likert scale. The mean scores for stress reactivity of the sample of this study closely resembled the means reported as norms for non-clinical populations (Schlotz, Yim, Zoccola, Jansen, & Schulz, 2011). The means of personality dimensions were also very close to those reported in other studies (e.g. Donnellan, Oswald, Baird, & Lucas, 2006). With regard to the means of the parental bonding scales, in the present sample the care dimension mean score was slightly lower than previously reported for non-clinical samples, while the control mean was slightly higher (Parker, Tupling, & Brown, 1979; Want & Kleitman, 2006).

Table 3

Descriptive Statistics and Data Distribution

Scale	*N*		*Mean*	*Median*	*Mode*	*S*	*Skew*	*Kurt*	*Min*	*Max*
	Valid	*Missing*								
Chronic Stress	243	1	12.95	13.00	13.00	4.30	-.407	-.43	2.00	20.00
PB Parental Care	227	17	46.51	46.00	36.00	14.67	-.490	-.01	5.00	72.00
PB Parental Control	227	17	30.30	30.00	23.00	13.14	.367	.48	1.00	74.00
SR Prolonged Reactivity	240	4	3.63	4.00	4.00	1.92	.164	-.28	.00	8.00
SR Reactivity to Work Overload	240	4	5.48	6.00	5.00	2.58	-.146	-.87	.00	10.00
SR Reactivity to Social Conflict	240	4	5.75	6.00	6.00	2.26	-.067	-.71	.00	10.00
SR Reactivity to Failure	239	5	4.52	4.00	4.00	1.63	.357	-.34	1.00	8.00
SR Reactivity to Social Evaluation	240	4	4.91	5.00	5.00	2.52	-.032	-.86	.00	10.00
SR Total Score	240	4	24.27	25.00	26.00	7.80	.033	-.24	5.00	44.00
Big5 Extraversion	241	3	3.01	31.00	31.00	8.15	-.14	-.36	7.00	48.00
Big5 Agreeableness	241	3	3.98	41.00	41.00	5.88	-.81	.90	18.00	50.00
Big5 Openness	241	3	3.66	37.00	37.00	5.97	-.74	2.32	6.00	50.00
Big5 Conscientiousness	241	3	3.35	34.00	36.00	6.35	-.41	-.23	14.00	48.00

Big5 Emotional Stability	241	3	2.81	28.00	25.00	7.30	-.06	-.10	5.00	49.00

Note. PB – Parental Bonding; SR – Stress Reactivity.

Correlations

The correlation between prolonged stress reactivity as measured by the PSRS and the Chronic Stress was found to be $r(242) = .30$, $p < .001$, which demonstrated support for the reliability for the Chronic Stress measure as the two scales seemed to measure a similar concept. Strong significant correlations were found between chronic stress and all dimensions of stress reactivity, except for reactivity to social evaluation. Chronic stress was also significantly correlated with emotional stability, but not with other dimensions of personality. There were no significant correlations found between chronic stress and parental bonding; however, various dimensions of stress reactivity correlated with controlling parental bonding. The two dimensions of parental bonding were significantly negatively correlated $r(242) = -.21$, $p < .001$, which was similar to the results of other studies (e.g. Want & Kleitman, 2006). The complete correlation matrix for the variables utilised in this study can be found in the Table 4.

Table 4

Correlation Matrix

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Chronic Stress	1													
2. SR Prolonged Reactivity	.30**	1												
3. SR Reactivity to Work Overload	.24**	.43**	1											
4. SR Reactivity to Social Conflict	.16*	.32**	.54**	1										
5. SR Reactivity to Failure	.21**	.32**	.50**	.48**	1									
6. SR Reactivity to Social Evaluation	.09	.19**	.35**	.30**	.40**	1								
7. SR Total Score	.27**	.61**	.81**	.75**	.73**	.66**	1							
8. PB Parental Care	-.11	-.10	-.01	.07	.08	-.09	-.02	1						
9. PB Parental Control	.05	.14*	.11	.15*	.13*	.09	.17**	-.21**	1					
10. Big5 Extraversion	-.08	-.18**	-.22**	-.18**	-.25**	-.48**	-.38**	.12	-.15*	1				
11. Big5 Agreeableness	-.07	.03	-.03	.06	.07	-.02	.02	.15*	-.06	.26**	1	.		
12. Big5 Openness	.01	-.03	-.12	-.10	-.02	-.27**	-.17**	-.05	-.15*	.28**	.36**	1		
13. Big5 Conscientiousness	.03	.00	-.14*	-.08	.01	-.12	-.11	.12	-.22**	.02	.17**	.18**	1	
14. Big5 Emotional Stability	-.31**	-.49**	-.63**	-.58**	-.47**	-.37**	-.72**	.07	-.25**	.15*	.03	.11	.11	1

Note. PB – Parental Bonding; SR – Stress Reactivity.

** Correlation is significant at the 0.01 level.

* Correlation is significant at the 0.05 level.

Hypotheses Testing

This section described the process of testing the hypotheses as outlined earlier. First, gender differences in chronic stress and stress reactivity would be examined. Further, interactions between the variables identified in the hypotheses and chronic stress would be investigated, followed by an examination of a corresponding structural equation model for the general chronic stress model, the social stress reactivity model, and the achievement stress reactivity model. Each hypothesis would be discussed in detail and the results of structural equation modelling would be provided.

Hypothesis 1: Gender differences

Levene's test results showed that equal variance could indeed be assumed. Further t-test revealed no statistically significant difference between males and females ($t(242) = -1.244$, $p = .215$) with regard to the overall experience of chronic stress. However, further tests demonstrated significant difference in overall reactivity to stress ($t(242) = -4.051$, $p < .001$) with females being more reactive ($M = 25.25$, $SD = 8.29$) in comparison to males ($M = 20.39$, $SD = 7.30$). More precisely, significant differences between genders were found with regard to prolonged stress reactivity ($t(242) = -2.562$, $p < .05$), reactivity to work overload ($t(242) = -3.078$, $p < .005$), reactivity to social conflict ($t(242) = -4.091$, $p < .001$), and reactivity to social evaluation ($t(242) = --2.409$, $p < .05$) with females consistently showing higher stress reactivity than males.

However, in light of the unequal sample size (49 males and 195 females) a test for unbalanced designs was conducted to estimate the changes in *p*-value by omitting observations from the sample with larger size. The same number of females as males (49) was randomly selected using SPSS random selection function, and the new equal samples were compared using independent sample t-test procedure. The obtained results differed

from the previous set. The only significant gender differences were in the stress reactivity to social conflict ($t(96) = -3.487$, $p < .01$) and to overall stress reactivity ($t(96) = -2.706$, $p < .01$), with a marginal but non-significant difference in the stress reactivity to work overload ($t(96) = -1.962$, $p = .053$). It would be worth mentioning here that integrating the results of both sets of tests, it can only be safely concluded that there are significant gender differences in overall stress reactivity and stress reactivity to social conflict, as would be further discussed later.

Hypothesis 2: Interaction effects in stress reactivity and chronic stress

It was hypothesised that there were significant interaction effects between parental bonding and personality variables that could predict stress reactivity and chronic stress. The results demonstrated that emotional stability ($\beta = -.31$, $p < .000$), interaction between controlling parental bonding and extraversion ($\beta = .17$, $p < .05$), and interaction between controlling parental bonding and agreeableness ($\beta = -.16$, $p < .05$) were significant predictors of chronic stress ($F(17, 226) = 3.598$, $p < .000$). The change in R^2 revealed that adding interaction effects to the regression equation significantly improved the amount of variance explained by the model: $\Delta R2 = .10$, $\Delta F(10, 226) = 2.71$, $p < .005$. The multiple correlation coefficient demonstrated that approximately 21% of variance in chronic stress could be explained.

The interaction effects were further examined through generating interaction equations for each significant interaction. The interaction effects between controlling parental bonding and extraversion on chronic stress revealed that individuals who scored higher in control and higher in extraversion and those who scored low in control and low in extraversion were significantly more likely to obtain high scores in relation to chronic

stress. Furthermore, controlling parental bonding appeared to be particularly significant when extraversion is high. These interaction results were depicted in Figure 4.

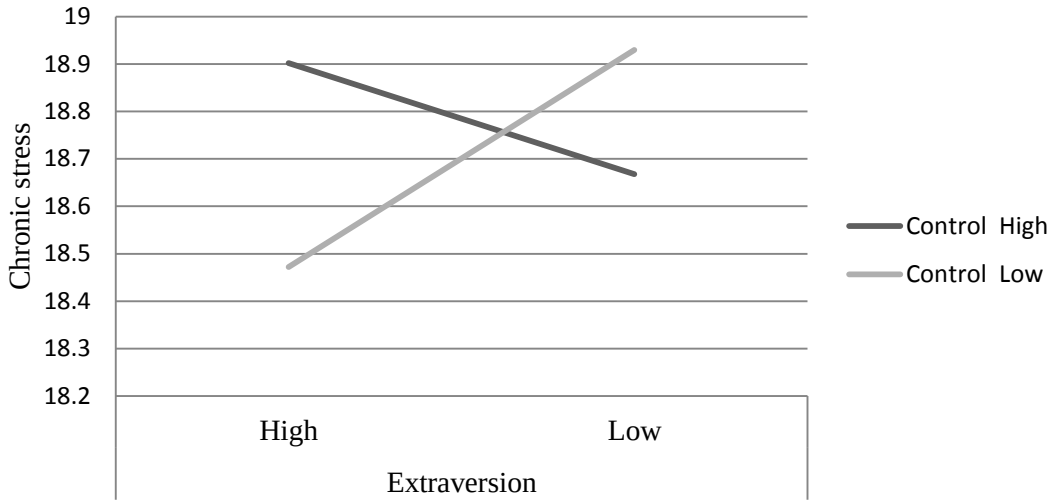

Figure 4. Interaction effect between controlling parental bonding and extraversion on chronic stress.

The interaction effects between controlling parental bonding and agreeableness on chronic stress revealed that individuals who scored high in chronic stress also scored higher in control and low in agreeableness or low in control and high in agreeableness. However, controlling parental bonding would exert more influence when agreeableness is low. These interaction results were shown in Figure 5.

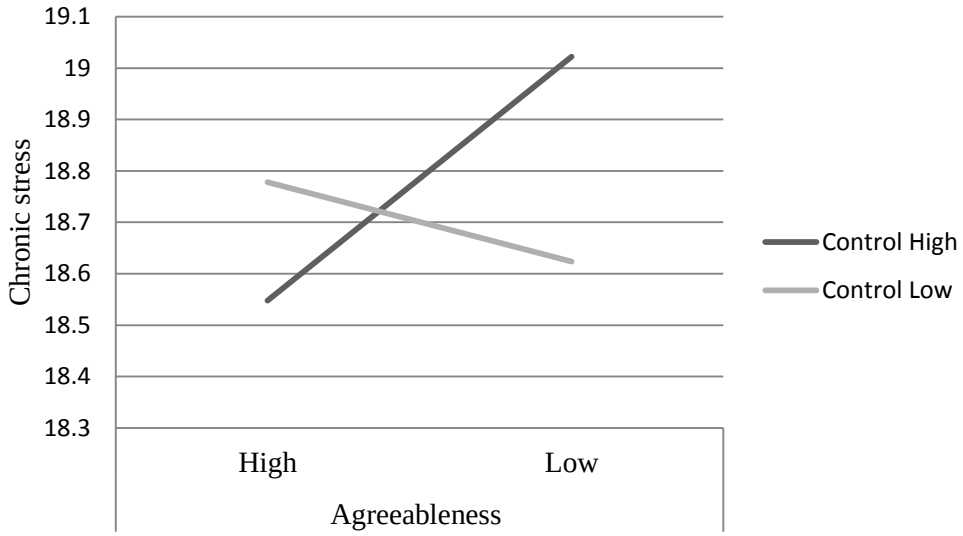

Figure 5. Interaction effect between controlling parental bonding and agreeableness on chronic stress.

All in all, the results demonstrated that controlling parental bonding interacted with personality influenced chronic stress. The effects of personality on chronic stress were in fact affected by controlling parental bonding, as affection in parental bonding did not show any significant interaction.

The same procedure was employed to test for interaction effects between parental bonding and personality variables on stress reactivity. However, no significant interaction effects were found, while emotional stability (β= -.68, p<.000), extraversion (β= -.30, p<.000), and agreeableness (β= .13, p<.01) significantly predicted stress reactivity. Naturally, no change in R^2 was found either: $\Delta F(10, 226) = .65$, $p > .05$.

Hypothesis 3: General model of chronic stress

The hypothesised model of the general pathway in chronic stress suggested in this study expected that parental bonding and personality variables would be predictive of chronic stress. It was further specified that parental bonding and personality variables

would have a path to stress reactivity and a further path leading to chronic stress. Contrary to the hypothesis the initial Structural Equation Modelling analysis showed poor fit of the model ($\chi 2(7)= 18.16$, $p = .011$, RMSEA = .08). Modification indices suggested that not only did chronic stress depend on stress reactivity ($p = .000$), but stress reactivity also depended on chronic stress, which was consistent with the relevant research literature. Implementing the modifications, a regression path from chronic stress to stress reactivity was added into the structural equation. This yielded an improved fit, which can be considered marginally acceptable: $\chi 2(6)= 12.83$, $p = .046$, RMSEA = .07.

Within the identified model the relationships between stress reactivity and chronic stress, extraversion, agreeableness, and emotional stability were found to be significant, whereas relationships between stress reactivity and affection and controlling parental bonding, openness, and conscientiousness were not significant. Furthermore, it was found that there was reciprocal determinism between chronic stress and stress reactivity, i.e. chronic stress predicted stress reactivity and stress reactivity predicted stress. This confirmatory model tested the hypothesis that personality and parental bonding played a role in predicting chronic stress. However, according to the results obtained this hypothesis was only partially supported. The final results were shown in Figure 6.

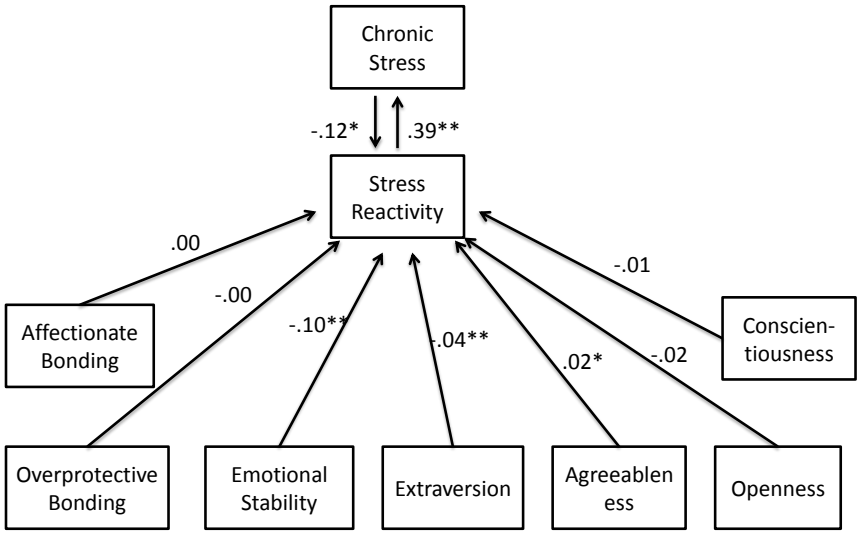

Figure 6. Confirmatory General Model of Chronic Stress (Standardized Solution; N = 242). Significant at: * $p<.05$, ** $p<.005$.

Hypothesis 4: Interaction effects within social model of chronic stress

The hypothesis proposed that there were significant interactions between the variables of affectionate parental bonding, extraversion, agreeableness, and emotional stability predict social stress reactivity and chronic stress. Similar to the procedure used for testing interaction effects of parental bonding in chronic stress described earlier, linear regression analysis was carried out. Affection in parental bonding was entered in the first step, extraversion, agreeableness, and emotional stability were entered in the second step, and all possible interactions between the aforementioned variables were entered in the third step. Emotional stability was the only significant predictor ($\beta= -.295$, $p <.001$). No significant interactions were found in the effects of affection in parental bonding, extraversion, agreeableness, and emotional stability on chronic stress.

As one of hypothesis of the present study suggested the construct of social stress reactivity as comprised by stress reactivity to social evaluation and stress reactivity to social conflict (as examined further as a pathway model), the same procedure was utilized to test for interaction effects in stress reactivity to social evaluation and in stress reactivity to social conflict. For stress reactivity to social conflict ($F (7, 236) = 19.835$, $p < .000$ explaining 37% of variance), while affection in parental bonding ($\beta = .12$, $p < .05$), extraversion ($\beta = -.13$, $p < .05$), and emotional stability ($\beta = -.57$, $p < .001$) were significant predictors, no significant interactions were found. Also, there were no significant interaction effects for stress reactivity to social evaluation, although extraversion ($\beta = -.46$, $p < .001$), agreeableness ($\beta = .12$, $p < .05$), and emotional stability ($\beta = -.32$, $p < .001$) were identified to be significant predictors ($F (7, 236) = 17.524$, $p < .000$ explaining 34% of variance).

Hypothesis 5: Social model of chronic stress

The hypothesis with regard to the social model of chronic stress predicted that affection in parental bonding, extraversion, agreeableness, and emotional stability would comprise a social stress reactivity construct, which could lead to chronic stress. Social stress reactivity was measured by stress reactivity to social conflict and reactivity to social evaluation scales of the perceived stress reactivity scale. This model was using social stress reactivity as the latent variable and the two social dimensions as the observed variables underlying the latent variable.

This model could not be tested due to a covariance matrix error that its specification was producing. The covariance matrix problem was understood in terms of possible estimation problem for the latent variable. The exceeding number of possible solutions for solving the structural equation required to impose a constraint on the latent

variable. Following recommendations from the literature (Raykov & Marcoulides, 2006), the latent variable of social stress reactivity was fixed to 1, which fixed the error. The tested model showed a poor fit $\chi 2(9) = 66.76$, $p = .000$, RMSEA = .16.

Following the results obtained when testing the general model hypothesis, the possibility of reciprocal determinism was taken into account. Therefore a regression path from chronic stress to social stress reactivity was added to the model specification. However, the modified model still showed a poor fit $\chi 2(8) = 58.23$, $p = .000$, RMSEA = .16. In conclusion, the confirmatory analysis conducted to test the social model of chronic stress showed that the hypothesis must be rejected.

Hypothesis 6: Interaction effects within achievement model of chronic stress

With regard to the achievement model of chronic stress, the hypothesis suggested that there could be significant interactions between controlling parental bonding, conscientiousness, and emotional stability in predicting achievement stress reactivity and chronic stress. It was also found through the testing of the general model of chronic stress that the personality trait of extraversion was an essential aspect in stress reactivity. Extraversion was also well described in the literature as an important variable affecting stress exposure and subsequent coping (e.g. Vollrath, 2001). Given that this omission was noted prior to testing of the achievement model and in light of the exploratory nature of this study, it was decided to add extraversion to the hypothesis.

Similar to the procedures used earlier for testing interaction effects of parental bonding in chronic stress, linear regression analysis was conducted. Controlling parental bonding was entered in the first step, extraversion, conscientiousness, and emotional stability were entered in the second step, and the interactions between these variables were entered in the third step. The results of the multiple regression showed that the variables

could explain 16% of variance (F (7, 236) = 6.444, p <.000). Emotional stability was a significant predictor (β= -.326, p <.001) as well as interactions between controlling parental bonding and extraversion (β= .195, p <.005), and controlling parental bonding and conscientiousness (β= .136, p <.05). The change in R^2 demonstrated the significant effect that interactions had on explaining chronic stress: ΔR2= .06, ΔF(3, 236) =5.32, p < .001.

The interaction effects between controlling parental bonding and extraversion on chronic stress showed that those who score higher in control and higher in extraversion and those who score low in control and low in extraversion are significantly more likely to score high in chronic stress. Furthermore, controlling parental bonding appears to be particularly significant when extraversion is high. These results were depicted in Figure 7.

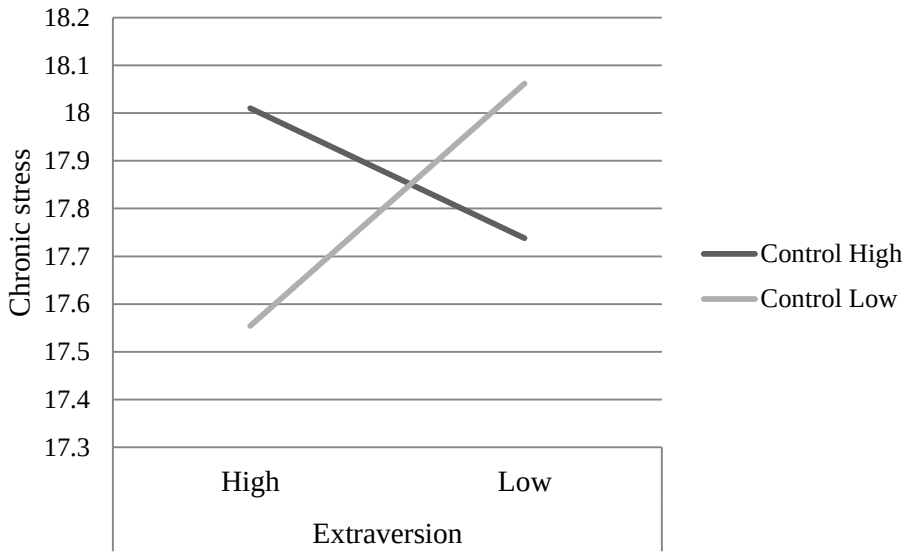

Figure 7. Interaction effect between controlling parental bonding and extraversion on chronic stress.

Another significant interaction was found between controlling parental bonding and conscientiousness. Its influence on chronic stress was further examined. The results showed that those who scored higher in control and higher in conscientiousness and those

who scored low in control and low in conscientiousness were significantly more likely to score high in chronic stress. Furthermore, when conscientiousness was high, controlling parental bonding appeared to be particularly significant. The graph of this interaction was presented in Figure 8.

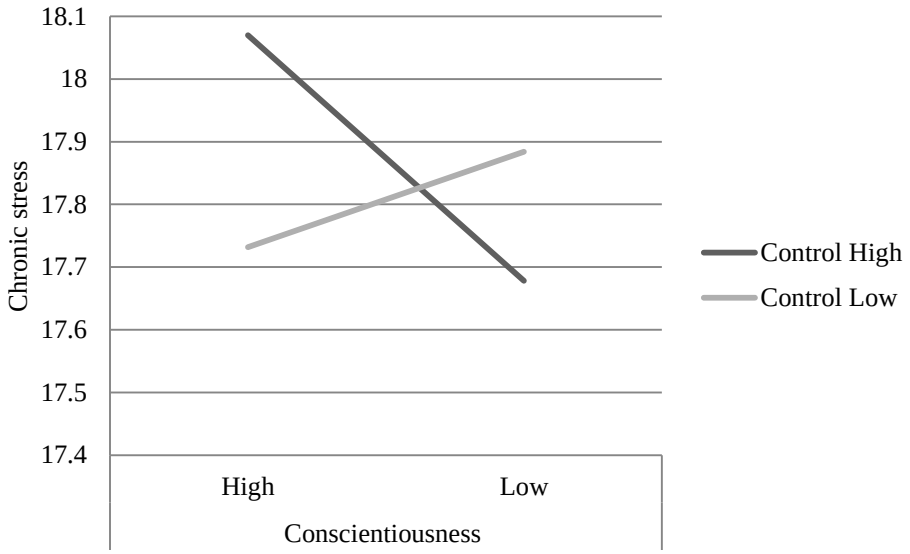

Figure 8. Interaction effect between controlling parental bonding and conscientiousness on chronic stress.

As in this study achievement stress reactivity was comprised of stress reactivity to work overload and stress reactivity to failure, interaction effects for these stress reactivities were also examined. Multiple regression analysis for stress reactivity to work overload could explain 44% of variance. It showed that extraversion (β= -.14, p <.01), emotional stability (β= -.624, p <.001), and the interaction between controlling parenting and conscientiousness (β= .118, p <.05) were significant predictors of stress reactivity to work overload: F (7, 236) = 26.286, p <.000. A closer examination of the interaction showed that individuals who scored low on controlling parental bonding and low on conscientiousness were significantly more likely to score higher on stress reactivity to work overload. The graph depicting this interaction was shown in Figure 9.

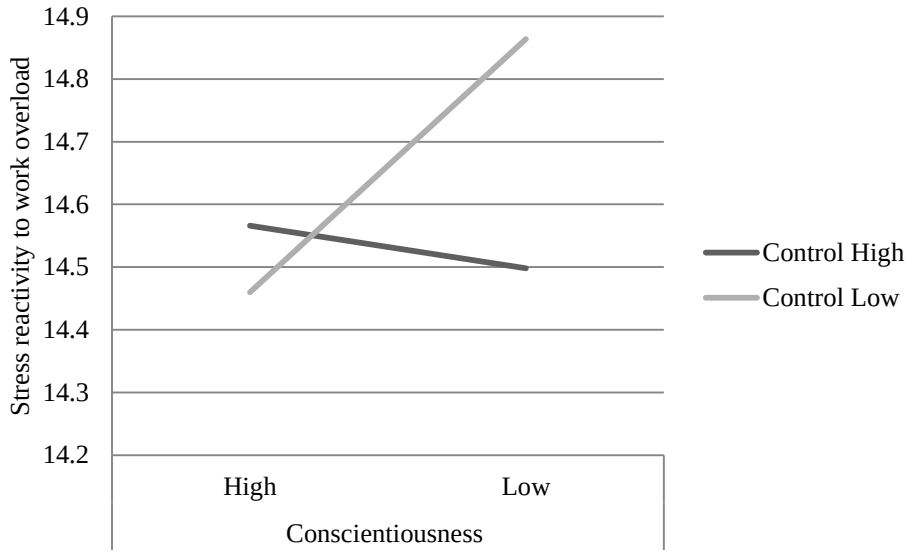

Figure 9. Interaction effect between controlling parental bonding and conscientiousness on stress reactivity to work overload.

With regard to the stress reactivity to failure, a multiple regression yielded F (7, 236) = 12.79, p <.000 explaining 28% of variance. Significant predictors of the stress reactivity to failure included extraversion (β= -.173, p <.005), emotional stability (β= -.455, p <.001), and the interaction between controlling parental bonding and extraversion (β= -.13, p <.05). The interaction between controlling parental bonding and extraversion demonstrated that those individuals who scored higher on control and lower on extraversion as well as those who scored lower on control and lower on extraversion had higher scores on stress reactivity to failure. Therefore, the effect of control was more significant when extraversion was high. These findings were presented in Figure 10.

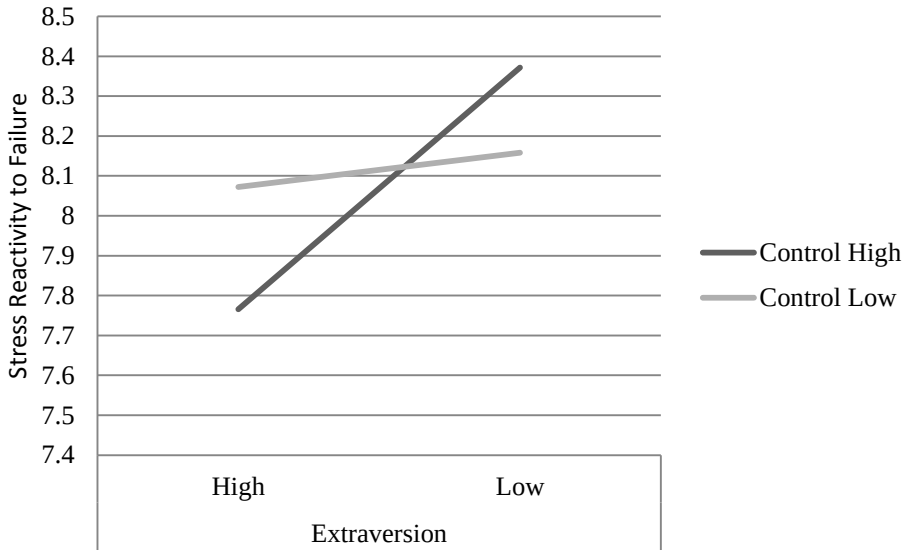

Figure 10. Interaction effect between controlling parental bonding and extraversion on stress reactivity to failure.

Hypothesis 7: Achievement model of chronic stress

The hypothesis with regards to the achievement model of chronic stress proposed a pathway from controlling parenting as well as the personality variables of conscientiousness and emotional stability leading to the achievement stress construct as measured by stress reactivity to failure and stress reactivity to work overload, which then further led on to predict chronic stress. As mentioned earlier, due to the author's unfortunate omission, extraversion was not initially included in the model despite being mentioned in the literature as an important variable affecting stress exposure and subsequent coping (Vollrath, 2001). Given the exploratory nature of this study, extraversion was added to and tested within the model.

The achievement model showed a good fit: $\chi 2(8) = 10.69$, $p = .220$, RMSEA = .037, CFI = 0.99, TLI = 0.98. Examination of regression coefficients, however, demonstrated that the predictive value of controlling bonding and conscientiousness on

achievement stress reactivity was not statistically significant. Therefore, the achievement model of chronic stress was supported only partially. Figure 11 depicted the achievement model of chronic stress and the relationships between the variables.

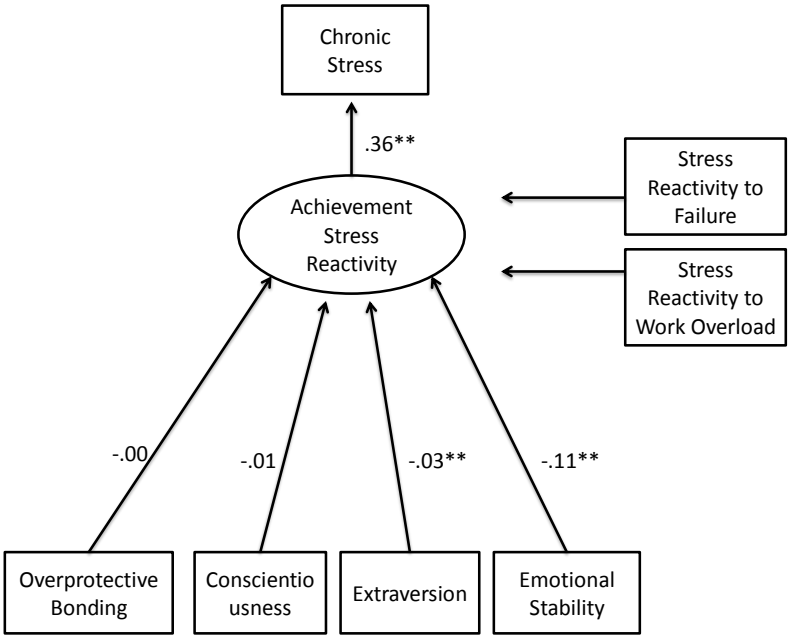

Figure 11. Achievement Model of Chronic Stress (Standardized Solution; N = 242). Significant at: * $p<.05$, ** $p<.005$.

CHAPTER 6

DISCUSSION

The central aim of the current study was to investigate chronic stress by examining the relationships between the variables of personal and social individual dispositions to explain the underlying mechanisms that sustain chronic stress. Drawing from the previous research literature two underlying aspects, personality and parental bonding, were identified as major factors contributing to the experience of chronic stress. While previous research had addressed both personality and bonding, there had been limited research evaluating both in combination as contributory factors. In this study it was hypothesised that it was the interaction between personal and social dispositions that may be able to explain chronic stress. Therefore, the aim of the present study was to integrate both factors by constructing a more encompassing model of chronic stress. As such, this study was intended as exploratory and further research is necessary in order to (dis)confirm and further develop the current findings.

The primary assumption and the hypothesis of this study proposed that chronic stress might be the result of maladaptive patterns of interaction between personal and social dispositions in stress processing. More precisely, it could be a mismatch between a person's temperamental characteristics and the social demands during upbringing that could constitute a basis for chronic stress. Furthermore, it was hypothesized that there could be two derivative, more precise models of chronic stress based on the domains of stress. The two models of chronic stress proposed, social and achievement, were both rooted in the basic human need for affection and social belonging. The social model was concerned with interpersonal experiences and social processes; whereas the achievement model focuses on the success and status needs as the means of control.

Indeed, there were significant interaction effects found between the individual disposition variables and chronic stress. Furthermore, the results of the structural equation modelling partially supported two out of the three initial hypotheses. There were new insights gained in relation to the role of individual differences in stress reactivity and in chronic stress. The current chapter discussed the findings of this study within the context of the extant research. First, the findings with regard to gender differences would be addressed. Afterwards, the findings from the analyses of interaction effects and from the structural equation modelling of the three models investigated here, general, social, and achievement, would be discussed in detail.

Gender Differences

The previous research literature suggested that there were gender differences in chronic stress, with women being significantly more susceptible than men (Matud, 2004). However, while the present study did not find gender differences in chronic stress, significant differences in stress reactivity were indeed identified. The differences in methodology can partially explain this discrepancy. First of all, the chronic stress questionnaire used in this study was not a pre-established measure. While it showed good reliability, more research is necessary to establish its qualities, and perhaps, develop a better psychometrically sound scale. Secondly, the sample size was possibly insufficient and imbalanced. As mentioned previously, the sample consisted of a significantly larger proportion of female participants to male ones. As such, after balancing out the gender ratio, the sample size was significantly reduced, thus making the analyses lose power. In sum, the quality of the scale and the small sample size after gender balancing may explain the difference in the present results as compared to the previous literature.

With regard to stress reactivity, the research literature agrees with the present findings which demonstrate that stress reactivity differs among genders (Rudolph & Hammen, 1999; Stroud et al., 2002). In accordance with previous findings (Rudolph & Hammen, 1999; Stroud et al., 2002), women were found to be significantly more reactive to social conflict. Increased reactivity to social conflict in women was found to be an important direction for therapeutic work as it identified the most effective area of clinical focus. On the other hand, no differences in reactivity to social evaluation were identified. It was possible that, social evaluation represents a domain equally relevant to both genders. It could be that the social aspects of social evaluation were more concerning for women, while the evaluative were for men. Further more specific research is necessary to test this hypothesis. However, as the present findings and the previous literature pointed towards a gender distinction in the source of stress generation, it might be a fruitful direction for future research.

Interestingly, women were also found to be marginally more reactive to work overload. While it might be expected that men would be more reactive to work and achievement stressors (Stroud et al., 2002), the results of this study suggest otherwise. There were several possible explanations for this finding. First, there were a greater number of women in the sample of this study which could have affected the effect size. Additionally, as men were significantly more likely to present greater emotional inhibition and fewer somatic and psychological symptoms, it was very possible that male reactivity was underrated and misrepresented. Perhaps, a different methodology using more objective measures of reactivity (e.g. physiological response, systematic symptom/mood diary) could shed more light on the present issue.

In this study women showed higher reactivity in all areas of stress reactivity that differed between genders. There were several possible interpretations of this result. On the one hand, it could be explained by findings showing that men had greater emotional inhibition (Matud, 2004). Thus it was possible that the results were skewed due to males underrating their experiences. However, on the other hand, it should be noted that taking into account that women tend to have higher normative scores on most measures, these findings did not suggest deviation from such norms. Further research is needed to clarify these results. Nonetheless, as women appeared to present more clear signs and symptoms of distress, these symptoms could inform and guide therapeutic interventions aimed at managing and decreasing stress reactivity. Perhaps, knowing that male reactivity can be inhibited despite exposure to the same stressors, similar interventions can be undertaken with male clients as an attempt to relieve more implicit symptoms of their distress.

General Model

The general model of chronic stress proposed and investigated here was based on the hypothesis that chronic stress can be the result of maladaptive patterns of interaction between personal and social dispositions in stress processing. Parental bonding experiences were seen as reflective of formed social dispositions, while personality traits represented one's temperamental or personal dispositions. Therefore it was hypothesised that, first, interactions between parental bonding and personality variables predicted stress reactivity and chronic stress, and, second, stress reactivity would be associated with personal and social dispositions through structural pathway, which would subsequently lead to chronic stress. The results obtained were discussed in detail below.

Interaction Effects for General Model

It was hypothesised that the interactions between parental bonding and personality variables predict stress reactivity and chronic stress. This hypothesis was partially confirmed and important findings noted. With regard to chronic stress, emotional stability, interaction between controlling parental bonding and extraversion, and interaction between controlling parental bonding and agreeableness were significant predictors of chronic stress.

The relationship between emotional stability and stress in general was well established (Brown & Resellini, 2011; Ebstrup, Eplov, Pisinger, & Jorgensen, 2011). The present results confirmed the significance of emotional stability for chronic stress in particular. Given the nature of the personality trait it was important yet expected that emotional stability exerted particular influence and was predictive of the overall experience of chronic stress. However, it was surprising that emotional stability was the only predictor of chronic stress when controlling for interaction effects. As there were significant interaction effects found between controlling parental bonding and extraversion, and between and agreeableness, these results show that certain social and personality dispositions (in this case controlling parental bonding, extraversion, and agreeableness) represented crucial but indirect effects that also needed to be taken into consideration.

The interactive effect between controlling parental bonding and extraversion demonstrated that individuals who had higher levels of chronic stress were likely to report a combination of being highly extraverted and having experienced very controlling bonding or the contrary combination of being highly introverted and having experienced under-protective parental bonding. Furthermore, controlling parental bonding seemed to

matter more for highly extraverted individuals. In other words, it is the combination of extraversion and the reported over/under control in parenting that could predict individuals' level of chronic stress.

This is a novel finding not yet described in the literature; however, it appeared logical as extraversion described social and assertive orientation (John et al., 2008) and controlling parenting presupposed intrusive and dependent relating (Cooklin, Giallo, D'Esposito, Crawford, & Nicholson, 2013) the combination of which appeared likely to evoke interpersonal clashes, which would likely be stressful and chronic. The contrary condition also appeared logical: introverted people characterised by social inhibition in combination with under-involved parental bonding could be experienced as rejection and chronic dissatisfaction, naturally predicting higher chronic stress.

In fact, such interpersonal mismatch resulting in a conflict between personal and social needs could be prompting what Winnicott (1996) termed a 'false self'- an adaptation to the demands of significant others at the expense of one's genuine experience. On the other hand, when the social demands and personal needs matched the outcome was positive: individuals who experienced controlling parenting but were introverted and those who extraverted with non-controlling parenting demonstrated low levels of chronic stress. It can be hypothesised that the former group felt supported and protected, while the latter enjoyed the freedom and personal space, which can explain the lower levels of stress.

The interaction between controlling parental bonding and agreeableness was a surprising discovery given that agreeableness is rarely mentioned as a predictor of chronic stress. Yet, the results appeared highly reasonable as it was the interaction between control and agreeableness that was important, but not the variables in themselves. Indeed, agreeableness implied a prosocial and affectionate attitude (John et al., 2008), whereas

control, again, entailed an intrusive and controlling approach (Cooklin et al., 2013). Therefore, when individuals were low in agreeableness and experience a high degree of control, chronic stress was likely to ensue. It appeared sensible that less agreeable individuals who felt controlled and manipulated were significantly more likely to experience high levels of chronic stress. Given the prosocial nature of agreeableness, the finding that control mattered more when agreeableness was low was logically sound.

All in all, there were three significant predictors of chronic stress found: emotional stability, interaction between controlling parental bonding and extraversion, and interaction between controlling parental bonding and agreeableness. It was shown that it was a mismatch between personal (extraversion and agreeableness) and social (control) dispositions that was indeed associated with chronic stress, whereas a matching of personal and social needs was associated with lower chronic stress. Future research may need to address this issue in more depth. Nevertheless, perceived parental bonding interacted with personality affecting chronic stress, which appeared to be an important finding and a useful direction for further research.

The second part of the hypothesis, which expected to find interaction effects between parental bonding and personality variables on stress reactivity, was not confirmed in the present sample. While emotional stability, extraversion, and agreeableness were significantly predictive of stress reactivity, no significant interaction effects could be identified.

In relation to the predictors of stress reactivity, the predictive value of emotional stability was expected, as it was already found to be associated with stress exposure, reactivity, stressor appraisal, and coping choice and effectiveness (Bolger & Zuckerman, 1995; Vollrath, 2001). Indeed, it is highly reasonable that more neurotic individuals are

more reactive to stress. The results with regard to extraversion, which implied enthusiasm and assertiveness (John et al., 2008), demonstrated that introverted individuals would be more reactive to stress, which could be understood through their less favourable appraisal (Vollrath, 2001). Finally, agreeableness was also a significant predictor of stress reactivity. Interestingly, the relationship was direct, so that higher agreeableness would predict higher stress reactivity. While it may sound counterintuitive, individuals high in agreeableness had been reported to see power assertion as less acceptable (Vollrath, 2001) and to experience more stress vulnerability when threatened (Schneider, 2004). This explained the present results and emphasised the importance of person-environment interaction. Therefore, while the current findings of interaction effects between parental bonding and personality on stress reactivity were tentative, it appeared important that future research addressed the issue of interactions in stress reactivity more in depth.

Pathway Analyses for General Model

In the general model of chronic stress it was proposed that there would be predictive pathways from parental bonding and personality variables leading to stress reactivity and subsequently to chronic stress. The initial model showed poor fit. Modification indices pointed to the predictive value of chronic stress for stress reactivity, in addition to the opposite direction. Literature consulted indeed confirmed the correlation between the two (Elfering et al., 2005; Schlotz et al., 2011); however, it appeared that the relationship between chronic stress and stress reactivity would be best described as reciprocal causation. Based on Bandura's conception of reciprocal determinism, which proposed a bidirectional causal model in which one's action both influence and are influenced by the environment (Bandura, 1978).

Contemporary researchers had shown that there was a reciprocal causation between emotional exhaustion in burnout and stress, the two in fact causing one another (McManus, Winder, & Gordon, 2002). While no analyses of this kind had been conducted with regard to chronic stress and stress reactivity, the current findings clearly pointed to a reciprocal causation between the two. Indeed, it appeared highly logical and probable that similar to the loop of reciprocal determinism described by Bandura (1978), stress reactivity would significantly influence chronic stress, but at the same time the level of chronic stress would also affect the level of stress reactivity. Once reciprocal causation of the relationship between chronic stress and stress reactivity was accounted for within the model, the goodness of fit of the model significantly improved reaching the marginally significant level ($\chi 2(6) = 12.83$, $p = .046$, RMSEA = .07). Again, the sample size might not have been large enough to reach a better fit of the model; however, the significance level was acceptable, thus suggesting that the overall structure of the model was feasible.

Analyses of regression coefficients showed that the hypothesis was only partially supported. In addition to the reciprocal causation of chronic stress and stress reactivity, stress reactivity was indeed predicted by extraversion, agreeableness, and emotional stability. As extraversion was linked to more positive appraisal (Vollrath, 2001) and positive affect (John et al., 2008), its predictive value for stress reactivity was hypothesised and indeed confirmed. Extraversion exhibited both direct and interactive effects on stress reactivity demonstrating its predictive value and important role in stress predisposition and generation. Thus, higher extraversion could be representative of a protective factor against higher stress reactivity and greater chronic stress.

Agreeableness has rarely been mentioned as a predictor of stress reactivity, yet, its propensity towards harmony, compassion, and lower exposure and reactivity to stress

(John et al., 2008; Vollrath, 2001) may explain the current results which showed a significant causal contribution of agreeableness to stress reactivity. Thus agreeableness was confirmed to be a part of the partially supported chronic stress model. It was noted in the literature that agreeableness represented the degree of trust and social orientation that individuals can exhibit (Schneider, 2004). A study that looked at the cortisol response in stress reactivity demonstrated a negative correlation between agreeableness and reactivity (Garcia-Banda et al., 2011). Perhaps as agreeableness was linked with interpersonal stress (Roberts et al., 2007) it could constitute a protective factor (if high) or a vulnerability (if low) for stress reactivity and subsequently chronic stress.

Emotional stability, or the other end of the spectrum – neuroticism, was shown as one of the most significant determinants of stress reactivity. Within the present model, emotional stability was also confirmed as a significant predictor of stress reactivity. The present results were in line with the previous literature which suggested that emotional stability determined individuals' perceptions of and sensitivity to threat (Furnham, 2012; Schneider, 2004; Vollrath, 2001). Low emotional stability was associated with greater stress exposure, negative and inflated appraisal, negative affectivity and emotionality (John et al., 2008; Schneider, 2004; Vollrath, 2001), which explained its essential role in and contribution to the reciprocal causation loop of stress reactivity and chronic stress, the current results showed that it also predicted stress reactivity.

All in all, within the general model of chronic stress, the significance of stress reactivity, extraversion, agreeableness, and emotional stability was confirmed through both the regression coefficients and the model fit. On the other hand, although it was expected that openness would be predictive of stress reactivity, this part of the hypothesis was rejected. In fact, previous research reported a moderating role of openness on stress

reactivity (Williams et al., 2009), which might explain why in the current study the direct path was not significant. As conscientiousness was linked to higher self-efficacy and lower risk taking (Roberts et al., 2007), it was expected to be inversely related to stress reactivity. However, in the present study this relationship did not reach significance. As several authors had mentioned the indirect effects of conscientiousness (Garcia-Banda et al., 2011; Roberts et al., 2007), again it was possible that conscientiousness was more robust in interaction rather than predictor, which was indeed found in the achievement model and is discussed later in the chapter.

With regard to parenting the current findings did not support the present hypothesis that either affectionate or controlling parental bonding would be predictive of chronic stress. However, as discussed earlier, significant interaction effects between parental bonding and personality were found. This suggested that the initial idea of the interaction between personal and social aspects of individual differences was correct, however, the structural model as it had been hypothesised was not fully descriptive of the data. Indeed, while parental bonding has a place in stress reactivity and chronic stress (as suggested by the interaction effects and research literature, e.g. Repetti, Taylor, & Seeman, 2002), it appeared that there were interactive effects that exerted indirect influence on stress reactivity and on chronic stress. Future research would need to account for these findings and to address the issues of interaction effects in construction and testing of further models in order to approach this matter more in-depth.

Summary

In sum, the hypotheses in relation to the general model of chronic stress were partially supported. Maladaptive patterns of interaction between personality and parental bonding variables were indeed significant in predicting chronic stress. In particular, the

interactions between control and extraversion and between control and agreeableness demonstrated a significant influence on chronic stress. These results supported the theory that a mismatch between personal and social needs might constitute a basis for chronic stress. While there were no interaction effects involving emotional stability, this personality variable was a significant predictor of chronic stress in itself, even when controlled for interaction effects. Stress reactivity, on the other hand, was found to be predicted by emotional stability, agreeableness, and extraversion.

The general model of the chronic stress tested using structural equation modelling was only partially supported. While stress reactivity, extraversion, agreeableness, and emotional stability indeed had significant pathways leading to chronic stress, parental bonding, openness, and conscientiousness did not. Importantly, a reciprocal causality relationship was discovered between chronic stress and stress reactivity. These results taken together suggest that while the model as proposed did not hold true, interaction effects needed to be further examined in order to better understand the absence of the expected effect of these variables. Further models need to be developed and tested, taking into account such interactive effects as, for example, that of controlling parental bonding.

Two further models of chronic stress that were theoretically derived were investigated in the present study. The results of the analyses conducted were discussed below. A social model and an achievement model of chronic stress were proposed in light of the differences among stress domains. The social model addressed interpersonal processes and their particular role in the dynamics of chronic stress. The achievement model, on the other hand, was concerned with the role of accomplishment and success

within the framework of chronic stress. These two models are discussed in detail in sections that follow.

Social Model

The proposed hypotheses for the social model of chronic stress were derived from the general hypothesis but with a closer focus on social processes. Thus it was hypothesised that chronic stress could be the result of maladaptive patterns of interaction between personal and social dispositions in social stress processing. The first hypothesis suggested that interactions between affection in parental bonding and personality variables of agreeableness, extraversion, and emotional stability would predict social stress reactivities and chronic stress. The second hypothesis proposed a pathway from affection in parental bonding and the personality traits of agreeableness, extraversion, and emotional stability to social stress reactivity (as comprised by stress reactivity to social evaluation and stress reactivity to social conflict) to chronic stress. The results obtained in relation to these hypotheses were discussed further.

Interaction Effects for Social Model

As outlined in the hypothesis and following the general model, it was expected to find interaction effects between affection in parental bonding, extraversion, agreeableness, and emotional stability predicting chronic stress, stress reactivity to social evaluation and stress reactivity to social conflict. Nonetheless, the results demonstrated that there were no interactions among these variables and only emotional stability was a significant predictor of chronic stress. As discussed earlier, the present results showed that emotional stability was the only predictor of chronic stress when controlling for interaction effects. Yet, given the strong association between emotional stability and stress in general (Brown &

Resellini, 2011; Ebstrup et al., 2011), these results seemed reasonable and provided further empirical evidence in relation to previous research.

With regard to stress reactivity to social conflict, significant predictors included affectionate parental bonding, extraversion, and emotional stability. These results resemble the hypothesis and naturally were well grounded in the research literature. As affection had been shown to have a direct physiological effect on stress reactivity in particular in conflict (Floyd et al., 2010), the present results provide additional support for this finding. While previous research looked at the present day affectionate communication (Floyd et al., 2010; Floyd & Riforgiate, 2008), in this study it was the retrospective perceptions of affection in parental bonding that were examined. However, the results further supported the theory that early relational patterns (i.e. parental bonding) become relatively stable templates for future bonding (e.g. Fraley, 2002). As such, these results emphasised the role of early parental bonding in general and underline the role of affection in stress reactivity in social conflicts.

Extraversion and emotional stability were the two personality variables found to be significant predictors of stress reactivity to social conflict. Extraversion was reflective of an active and assertive approach including to potential stressors (John et al., 2008), which can explain the present results as more introverted individuals would experience higher stress reactivity to social conflict as they would be less likely to approach the conflict in a proactive way and/or seek social support. Emotional stability, on the other hand, reflected appraisal and affectivity with which one approaches life events (John et al., 2008; Vollrath, 2001). According to the present results, lower emotional stability (higher neuroticism) was highly predictive of higher stress reactivity to social conflict, which appeared natural in the context of negative appraisal and negative affectivity that neuroticism implied. The present

findings were in accordance with the previous research literature that indicated that emotional stability played important role in stress perceptions, reactivity, and resilience (Diehl & Hay, 2010; Schneider, 2004).

Interestingly, agreeableness was not found to be predictive of stress reactivity to social conflict. Although agreeableness as a personality trait represented individuals' proneness toward social and communal orientation (John et al., 2008), the present study did not find a significant association between the trait and reactivity to conflict when controlling for parental bonding, extraversion, emotional stability, and the interactions. It was possible that the effect of agreeableness per se was diminished by other variables, which appeared to exert a much stronger effect.

Nonetheless, agreeableness was found to be a significant predictor of the stress reactivity to social evaluation, along with extraversion and emotional stability. The results showed that more agreeable people were more prone to react to social evaluations. This can be viewed as their stronger concern with other people's opinions and the desire to fit in, which resonated with the theory that need to belong was a strong and pervasive motivator (Baumeister & Leary, 1995). Thus, individuals who were higher in agreeableness and hence had a stronger need to belong may be predisposed to higher stress reactivity to evaluative situations, which the present results suggested.

Similar to the stress reactivity to social conflict, extraversion and emotional stability were significant predictors of stress reactivity to social evaluation as well. Again, more introverted individuals were found to be more reactive to social evaluation, which could be understood through their tendency towards withdrawal and negative emotionality rather than assertiveness and social engagement (John et al., 2008). In relation to the social belonging theory mentioned above (Baumeister & Leary, 1995), more introverted

individuals would be less likely to socially engage while still having the need for belonging, thus perceiving any social evaluation as more intimidating and stressful.

Furthermore, while more emotionally stable individuals would be less reactive to social evaluation as they were prone to positive appraisal and positive emotionality (John et al., 2008; Vollrath, 2001), the opposite would be true for more neurotic individuals, as the present results suggested. Indeed, emotional stability appeared fundamental in determining stress reactivity, which the current findings and the previous literature agreed upon (Kammeyer-Mueller, Judge, & Scott, 2009; Kendler et al., 2003).

On the other hand, while affectionate bonding was a strong predictor of stress reactivity to social conflict, it did not predict stress reactivity to social evaluation when controlling for emotional stability, extraversion, agreeableness, and the interactions. Because social connectedness was previously identified as a predictor of stress reactivity in social evaluation (Seppala et al., 2013), it was hypothesised in the present study that affection in parental bonding would also be predictive of both social stress reactivities. Nonetheless, the results failed to demonstrate that for stress reactivity to social evaluation. There were two possible interpretations of our results. First, given that personality traits and interactions were controlled for, it is possible that personality had a strong effect that overrided that of affection in parental bonding. If so, interaction effects needed to be further explored in future research. The second possibility might have lied in the low reliability scores of this subscale. Retesting the hypothesis with a bigger sample size and having achieved a better reliability of the measurement would explicate the present issue. In any event, further research is necessary to better determine the relationships and the interactions between the variables involved in the social model of chronic stress.

Pathway Analysis for Social Model

The hypothesis of the present study with regard to the social model of chronic stress proposed a model with pathways from affection in parental bonding, extraversion, agreeableness, and emotional stability to social stress reactivity and consequently to chronic stress. Social stress reactivity was a construct comprised of stress reactivity to social evaluation and stress reactivity to social conflict. However, the model yielded a poor fit indicating that the hypothesis had to be rejected.

There could be several possible explanations for this result. First, the model as conceptualised was not correct and a different model needs to be developed. The lack of interaction effects found in testing the previous hypothesis suggests that either the variables utilized do not fully reflect the underlying processes in chronic stress or the measurements were not correct or both. Given the relatively low reliability of stress reactivity to social conflict and stress reactivity to social evaluation subscales, it was possible that the instruments failed to seize the characteristics of the variables they were supposed to measure. Furthermore, although the sample size was satisfactory for conducting structural equation modelling, it might not have been robust enough to correctly reflect the significance of the relationships between the variables. Taken together, the present results suggested that the social model of chronic stress as proposed was disconfirmed, while further in depth research is necessary in order to correctly identify the processes that take place around social stress reactivity.

Summary

To sum up, one of the hypotheses in relation to the social model of chronic stress was partially supported, while the other was rejected. This study identified significant predictors of chronic stress, stress reactivity to social evaluation, and stress reactivity to

social conflict that were discussed. While the model suggested here was not confirmed, the present findings were discussed in relation to research in the field, which could serve as a useful and informative direction for future research.

Achievement Model

The achievement model proposed in this study was based on the hypothesis that chronic stress can be a result of maladaptive patterns of interaction between personal and social dispositions in achievement stress reactivity. The achievement model was rooted in the assumption that there was a human social need to belong that translated into the importance of achievement as a sign of social validation and recognition (Baumeister & Leary, 1995). As early bonding and personality significantly shaped an individuals' perceptions and beliefs (Fonagy et al., 2007; Ozer & Benet-Martínez, 2006) it was hypothesised that personality and parental control would shape achievement related stress reactivity to chronic stress.

The two hypotheses with regard to the achievement model of chronic stress addressed the interaction effects and the pathway model. First it was hypothesised that there were significant interactions between controlling parenting, emotional stability, and conscientiousness. As discussed earlier extraversion was unfortunately omitted from the early hypotheses but was added prior to data analyses as the oversight was noticed. Secondly, it was hypothesised that there would be significant pathways from controlling parenting and personality traits of conscientiousness, emotional stability, and extraversion leading to higher stress reactivity in the area of achievement and consequently greater experience of chronic stress. The results obtained were discussed below.

Interaction Effects for Achievement Model

It was hypothesised that the interactions between controlling parental bonding and personality variables of emotional stability, conscientiousness, and extraversion predicted stress reactivity and chronic stress. This hypothesis was partially confirmed. With regard to chronic stress, emotional stability, interaction between controlling parental bonding and extraversion, and interaction between controlling parental bonding and conscientiousness were significant predictors of chronic stress. For stress reactivity to work overload, significant predictors included extraversion, emotional stability, and the interaction between controlling parental bonding and conscientiousness; whereas for stress reactivity to failure the predictors were extraversion, emotional stability, and the interaction between controlling parental bonding and extraversion. The present results demonstrated that a mismatch between personal and social (control) dispositions was associated with both stress reactivity and chronic stress.

Chronic stress

Emotional stability, interaction between controlling parental bonding and extraversion, and interaction between controlling parental bonding and conscientiousness were significant predictors of chronic stress. As a personality trait that represented one's appraisal and reactivity (John et al., 2008), the finding that emotional stability was a strong predictor of chronic stress was not surprising. However, as this relationship between emotional stability and chronic stress had been discussed earlier, it would not be repeated here (see General Model section).

Another relationship that was presented earlier was the interaction effect between controlling parental bonding and extraversion. Again, the results indicated that a combination of being higher in extraversion and the experience of controlling bonding or

the contrary combination of higher introversion and experience of under-protective parental bonding were predictive of higher levels of chronic stress. The role of controlling parental bonding was particularly significant when individuals were high in extraversion. Indeed, for those who were more social and communicative (John et al., 2008) intrusive relating may become a stronger stressor and may raise a stressful dilemma between having to be socially inhibited or to endure personal intrusion.

An interesting finding was made in relation to the predictive value of the interaction between controlling parental bonding and conscientiousness. Conscientiousness as a personality trait reflected self-efficacy, effective goal setting, and less risk taking (Roberts et al., 2007). In interaction with controlling parental bonding which suggested a high degree of control and intrusion (Cooklin et al., 2013; Ungar, 2009), conscientiousness becomes a significant predictor of chronic stress. While to the author's knowledge this interaction has not been mentioned in the literature, it appears plausible as more efficacious and determined individuals would find it stressful to continuously experience imposition and disturbance. On the other hand, the opposite also appeared reasonable as individuals who lack self-efficacy and self-direction would experience higher stress when they would not be able to receive support and guidance from others.

All in all, it appeared that the three predictors identified provide a sound explanation for patterns of interaction between social and personal disposition in prediction of chronic stress. However, it was also interesting that emotional stability was a significant predictor while it did not show any significant interactions; and vice versa: extraversion, conscientiousness, and controlling parental bonding were not significant predictors on their own, however, their significance was expressed through interaction

effects between them. This observation suggested that interaction effects may play a crucial, yet not a straightforward role, which required a more in-depth examination.

Stress reactivity to work overload

When direct and interaction effects were tested in stress reactivity to work overload, it was found that the significant predictors included extraversion, emotional stability, and the interaction between controlling parental bonding and conscientiousness. As can be seen, extraversion and emotional stability were significant predictors per se, whereas it was the interaction between controlling parental bonding and conscientiousness that carried additional predictive value.

As mentioned previously, extraversion reflected assertiveness and sociability (John et al., 2008) which had been found to be a protective factor against stress (Uliaszek et al., 2011). Work overload, on the other hand, referred to one's reaction to a high work load, that may have given rise to feelings of nervousness, agitation, and irritation as a response (Schlotz et al., 2011). According to the present results, more extraverted individuals were less reactive to work overload. This can be explained through extraversion being a protective factor that enabled individuals to be more proactive, assertive, and to feel more supported as extraverted individuals were more likely to seek support from others rather than to withdraw. This explanation not only was logical but could also be well located within the extant literature (John et al., 2008; Uliaszek et al., 2011).

The predictive value of emotional stability on stress reactivity in general and chronic stress was expected. As a trait that determines individuals' appraisal of and sensitivity to threat (Furnham, 2012; Schneider, 2004; Vollrath, 2001) it was also found to be a significant predictor of stress reactivity to work overload. More neurotic individuals were found to be more reactive to work overload, perhaps as they were more likely to

appraise any situation as more threatening and their capacity for coping as lower (Schneider, 2004; Vollrath, 2001). On the other hand, those who were more emotionally stable showed lesser reactivity, which was in line with previous research.

Finally, the interaction between controlling parental bonding and conscientiousness was another significant predictor of stress reactivity to work overload. While these two variables were not predictive on their own, the interaction between the two was significant. It was found that the combination of low control in parental bonding and low conscientiousness was significantly predictive of stress reactivity to work overload. This finding could be understood as individuals with lesser self-efficacy and competence, who had not experienced sufficient support and guidance, tended to react strongly to work overload. This conclusion appeared logical as individuals lacking both personal and social direction could feel lost and overwhelmed when faced with increased amount of work. While this finding was novel and, to the author's knowledge, had not been mentioned in the literature; the effect of conscientiousness on stress reactivity in general was well established (Garcia-Banda et al., 2011; John et al., 2008). Therefore, it appeared rational and important that the interaction between controlling parental bonding and conscientiousness played an important role in predicting stress reactivity to work overload.

Stress reactivity to failure

In the present study stress reactivity to failure was found to be predicted by extraversion, emotional stability, and the interaction between controlling parental bonding and extraversion. Unlike in chronic stress and stress reactivity to work overload, not all of the variables were found to be significantly predictive. Also extraversion was predictive both by itself and in interaction with controlling bonding. Conscientiousness, on the other hand, was not a significant predictor at all.

In order to avoid repetition, it would only be briefly noted that emotional stability and extraversion were found to be significant predictors, in this case for stress reactivity to failure. Again, as personality variables that strongly determined situational perception and appraisal (John et al., 2008; Vollrath, 2001), the results appeared sensible in suggesting that more extraverted and emotionally stable individuals showed lesser reactivity to failure. Indeed, the inclination to be more assertive, sociable, and positive in emotionality seemed to safeguard against increased reactivity to failure. It could be that either individuals appraised a possibility of a failure as less personally threatening or they were effective at coping, including having social support available, or both.

Stress reactivity to failure was also predicted by the interaction between controlling parental bonding and extraversion. Similar to the dynamics described before, extraversion promotes prosocial assertive orientation (John et al., 2008), whereas controlling parenting presupposes a high degree of control and intrusiveness (Cooklin et al., 2013). The interaction between the two was such that overprotected individuals that were more introverted were significantly more likely to have higher stress reactivity to failure. This finding made sense rationally: people who had experienced a high degree of intrusion and were unlikely to address it directly or access social support were likely to feel less in control, and thus reacted stronger to failures which they would appraise as more threatening and less manageable. Furthermore, these results resonated with Winnicott's notion of a false self when one needed to present a false façade in order to satisfy the demands of others (1996).

In sum, stress reactivity to failure was found to be most strongly associated with emotional stability, extraversion, and the interaction between controlling parental bonding and extraversion. These variables of individual differences reflected one's experiences,

perceptions, and appraisals thus shaping the manner in which individuals reacted to life events.

Pathway Analysis for Achievement Model

With regard to the achievement model of chronic stress it was hypothesised that there would be a pathway from controlling parenting, conscientiousness, and emotional stability leading to the achievement stress construct as measured by stress reactivity to failure and stress reactivity to work overload, which then would further lead to chronic stress. As mentioned before, the omission of the personality trait extraversion was found prior to conducting the analyses, which fortunately allowed it to be included in timely manner.

The pathway model of achievement stress showed a good fit for the initially hypothesised structure. However, further analyses of regression coefficients showed that the hypothesis was only partially supported. While the pathways from achievement stress reactivity to chronic stress and from extraversion and from emotional stability to achievement stress reactivity were indeed significant, the pathways from controlling parental bonding and conscientiousness were not.

While these results alone might be difficult to interpret, our previous findings concerning the interaction effects within the achievement model shed some light on this. Evidently controlling parental bonding and conscientiousness per se were not significant predictors for either chronic stress or the achievement stress reactivities. However, they were crucial moderators when interactions were examined. Thus controlling parental bonding interacted with conscientiousness to significantly predict the degree of both chronic stress and stress reactivity to work overload; furthermore, controlling parental bonding in interaction with extraversion was a significant predictor for stress reactivity to

failure. Therefore, the results obtained from testing the hypothesised pathway model and the partial support of the hypothesis were reasonable, as the model needs to be adjusted so that controlling parental bonding and conscientiousness were positioned as moderators rather than direct predictors.

With regard to the pathway from extraversion to achievement stress reactivity, the results supported our previous findings and the extant literature. Extraversion being a strong predictor of positive perception and appraisal (Vollrath, 2001) and positive affect (John et al., 2008) strongly determined achievement stress reactivity. Thus it was demonstrated that the individuals who are more positively inclined and socially oriented would react less to achievement related stressors. On the other hand, those who were more socially inhibited and withdrawn seemed to react stronger to the achievement stressors. This dynamic could be understood in terms of availability and use of social support as extraverted individuals not only more readily pursued social connections but were also more likely to believe that they would have been supported both through the stressful situation and in dealing with the consequences of it (John et al., 2008; Repetti et al., 2002).

The pathway from emotional stability to achievement stress reactivity was also significant, as expected. As described before, individuals who were more emotionally stable were less reactive to achievement related stressors, while those who were more neurotic were found to be more reactive. These results can be explained through one's appraisal propensity, so that more emotionally stable individuals perceived and evaluated life events as more positive and less threatening, as it had been previously mentioned in the literature (Furnham, 2012; Schneider, 2004; Vollrath, 2001). Furthermore, emotionally stable individuals were previously found to be more likely to perceive their coping skills

and abilities as more robust in comparison to the individuals who scored higher in neuroticism (Ebstrup, Eplov, Pisinger, & Jorgensen, 2011).

All in all, the hypothesis concerning the pathways from controlling parental bonding, conscientiousness, extraversion, and emotional stability leading to the achievement stress, and then further leading to chronic stress was partially confirmed. Combined with the previous results, controlling parental bonding and conscientiousness were found to be mediators for stress reactivity and for chronic stress, which future research would need to examine by constructing and testing a model that would account for these findings.

Summary

In sum, both of the hypotheses regarding the achievement model of chronic stress were partially supported. It was possible to identify several maladaptive patterns of interaction between personality and parental bonding variable in relation to both chronic stress and the achievement stress reactivities. The interactions between controlling parental bonding and extraversion and between controlling parental bonding and conscientiousness were important findings demonstrating the power of these interactions on chronic stress. It was demonstrated that while interaction effects are not as straightforward as direct relationships between the variables, they may be an invaluable source of information about the underlying dynamics. These effects indeed suggested the possibility that chronic stress may ensue from a mismatch between personal and social needs.

It was further found that while the achievement model of chronic stress was not fully supported, the variables that lacked significance for their predictive value were identified as mediators throughout the interaction analyses. Therefore a clear direction for future research would be a construction of a similar model to the one tested here, which

would, however, account for the indirect effects of controlling parental bonding and conscientiousness. Further research is necessary to investigate the processes underlying and driving the phenomenon of chronic stress in more depth.

Limitations

This section discussed the limitations encountered in this research study as certain problems were faced that resulted in several limitations. With regard to the measurement instruments utilised, unlike the rest of the questionnaires, the chronic stress scale was not pre-established. During the developmental stage of this study the author could not locate an established self-report measure of chronic stress in English. Therefore a simple self-report Likert scale instrument was created.

The scale showed good reliability and therefore was rendered acceptable; however, in-depth psychometric research and testing would be necessary in order to establish a reliable and precise instrument for measuring chronic stress. Furthermore, several scales of the established measures showed low reliability (stress reactivity to social conflict and stress reactivity to social evaluation scales of the perceived stress reactivity scale) thus requiring further research to retest both the reliability of those subscales and the results obtained as discussed previously.

The unequal gender distribution of the sample represented another limitation of this study. While the necessary actions were taken to equalise the sample for the gender analyses (randomly reducing the number of female participants), this procedure reduced the overall sample size thus inevitably diminishing the effect size power. Furthermore, a larger sample size would have been beneficial for structural equation modelling allowing a greater robustness of analyses. As pointed out in the literature, the ideal ratio of sample size to the number of free parameters is 20:1 was unrealistic in the present research, which

resembled the expected standard sample size of 200 reported in the research literature (Kenny, 2014). Thus while the sample size of this study satisfied the established standard, a larger one would have increased the precision of the analyses. All in all, further investigation with a more equal gender distribution and with a large sample size would be needed in order to confirm the present findings as well as to expand on the current knowledge.

As described earlier interaction effect analyses were performed on the imputated dataset. This approach had both advantages and disadvantages. Imputation yielded a more conservative, strict dataset in which several interactions could not reach the level of significance. Therefore it would be left for the future research to attempt to replicate current findings in a bigger and more diverse sample.

Another limitation of this study concerned the nature of its design. While the hypotheses of this study drew on the participants early experiences in their past, the study in itself was cross sectional. Therefore the data gathered reflected not only participants' subjective perceptions but also their memories thereof. Naturally, this implied a certain degree of bias and memory fallibility transpiring in the results. Perhaps this limitation did not directly affect the findings of this study per se as here chronic stress was being investigated within the framework of individual differences and perceptions one held in the present, regardless of the objective nature of the events. However, it would be important to note that the present results were not longitudinal and thus could not be interpreted as indicative of any risks and protective factors for early bonding. Again, it was only the current perceptions of past experiences and their effect on stress reactivity and chronic stress that was being investigated.

CHAPTER 7

CONCLUSIONS

The preceding chapters addressed and discussed various stages of this research study. The principal aim of this chapter was to provide a summary of the findings made and to discuss implications and further directions for future research. First, the conclusions of this research study would be reviewed. The following section would focus on the clinical implications of the present findings and the practical use in therapeutic applications.

Main Findings

This research study covered a range of issues in relation to chronic stress. This section aimed to highlight the main findings. The present research proposed three models of chronic stress – general, social, and achievement, and investigated them in terms of interaction effects and pathway analyses. The defining features of the general model included parental bonding (affection and control) and personality dispositions. Affectionate parental bonding, agreeableness, extraversion, and emotional stability comprised the social model of chronic stress. On the other hand, controlling bonding, extraversion, emotional stability, and conscientiousness were the defining elements of the achievement model of chronic stress. Certain pathways were confirmed while others were found not pertinent to the models, as discussed in depth earlier. Important interaction effects were found among variables. As discussed earlier, phenomena would be best understood within a context of potentially interrelated factors rather than separately (Cohen, Cohen, West, & Aiken, 2013; Kraemer et al., 2001), interaction effects allowed a

more all-encompassing view of the phenomena by accounting for how interrelations between several factors may affect the outcome.

The main findings with regard to the general model of chronic stress were that emotional stability, interaction between controlling parental bonding and extraversion, and interaction between controlling parental bonding and agreeableness were significant predictors of chronic stress. Thus it was found that the more extraverted individuals who experienced more controlling parenting and the more introverted individuals who were under-protected were experiencing higher levels of chronic stress. Furthermore, less agreeable individuals who had experienced stronger control and more agreeable individuals recalling low control were also more susceptible to chronic stress. These findings suggested that a mismatch between personal and social needs would be associated with chronic stress.

It was further found that interactions between controlling parental bonding and openness and between affectionate parental bonding and conscientiousness were also significant in predicting chronic stress. Thus individuals who reported a high degree of controlling parenting and were high in openness as well as those who experienced little control and were low in openness showed higher levels of chronic stress. On the other hand, those who experienced controlling parenting but were less open and those who had less controlling parenting and were highly open experienced lesser degrees of chronic stress as both groups perhaps had their needs accommodated socially.

The proposed general model of chronic stress was only partially supported. The pathways between extraversion, agreeableness, emotional stability, and stress reactivity, as well as between stress reactivity and chronic stress were found to be significant, whereas pathways between affection and controlling parental bonding, openness, and

conscientiousness and stress reactivity were not confirmed. An important finding with regard to the general model of chronic stress was the reciprocal determinism between chronic stress and stress reactivity. This finding demonstrated that the relationship between chronic stress reactivity could be best described as a cycle.

With regard to social model of chronic stress, there were no significant interactions identified. While affection in parental bonding, extraversion, agreeableness, and emotional stability were predictive of one or more of the social stress variables within the social model, the model itself was rejected. Measurement errors might have confounded the present results with regard to the social model, which therefore requires further examination.

The main findings concerning the achievement model were that emotional stability, interactions between controlling parental bonding and extraversion, and between controlling parental bonding and conscientiousness were predictive of chronic stress. Therefore, more extraverted individuals who reported higher experience of controlling parental bonding as well as more introverted individuals who reported low control had higher levels of chronic stress. Introverted individuals who experienced controlling parenting and extraverted individuals with more permissive parenting reported lower levels of chronic stress.

Another pattern that transpired was for more conscientious individuals who recounted higher control and for less conscientious with low scores in controlling parental bonding to report higher levels of chronic stress. Lower chronic stress was reported by more conscientious individuals who were complimented with less controlling parenting and by less conscientious ones whose conscientiousness seemed to be balanced by more controlling parenting. Again, it appears that a matching between personal and social needs

minimizes chronic stress, while a mismatch between the dispositions constituted the basis for chronic stress.

With regard to stress reactivities, extraversion, emotional stability, and the interaction between controlling parenting and conscientiousness were found to determine stress reactivity to work overload. Specifically, less conscientious individuals who had low scores on controlling parental bonding were found to be significantly more reactive to work overload. On the other hand, stress reactivity to failure was found to be associated with extraversion, emotional stability, and the interaction between controlling parental bonding and extraversion. In effect, more introverted individuals who recalled having experienced parental control reported higher stress reactivity to failure than those who were less overprotected and those who were more extraverted.

Finally, in relation to the achievement model of chronic stress, the pathway model was partially supported. It was found that while the pathways from extraversion and from emotional stability to achievement stress reactivity and from achievement stress reactivity to chronic stress were indeed significant, the pathways from controlling parental bonding and conscientiousness to achievement stress reactivity were not. Taking into account the interaction effects identified earlier, it could be concluded that the non significant pathways need to be transformed from direct into interaction effects in future research in order to better represent the underlying relationships between the variables.

Taken together, these results offer a new way of viewing the processes in relation to the phenomenon of chronic stress. The next section would address the therapeutic implications of the present results in providing directions for therapeutic interventions. This research study was aimed as the ground work for a different conceptualisation of chronic stress, which could provide a comprehensive framework for conceptualising the

phenomenon and facilitating future research in this area. Further research would be necessary in order to gain more in-depth understanding and build a sound knowledge base in the area.

Therapeutic Implications

This study aimed to investigate psychological processes involved in chronic stress based on a general hypothesis rooted in previous research findings. While the mechanisms behind and the corresponding treatments for acute and post-traumatic stress were well addressed in current literature, chronic stress had received less attention. In this study chronic stress was modelled within the framework of individual differences in personality and parental bonding. This study aimed to demonstrate that it was the interaction between personal and social disposition, i.e. possible (mis)matching between temperamental characteristics and social demands, that may have constituted the basis for chronic stress. The results demonstrated that both personality and parental bonding indeed play significant roles in processes involved in chronic stress.

Therefore the identified interactions suggested both optimal and maladaptive combinations between personality traits and aspects of parental bonding. As shown in Table 5, such combinations as controlling parental bonding and extraversion as well as controlling parental bonding and disagreeableness predicted high levels of chronic stress. Also, the opposite pattern of permissive, uninvolved parental bonding in combination with introversion and / or agreeableness also was associated with high degree of chronic stress. On the other hand, combinations of controlling parental bonding with introversion and with agreeableness predicted the lowest degrees of chronic stress within the sample tested. Permissive parenting in combination with extroversion and disagreeableness also demonstrated low levels of chronic stress.

In clinical context these interactions as identified in the present study could suggest a direction for therapeutic interventions. In light of the combinations that were predictive of higher and lower levels of chronic stress, clinicians might choose to identify which of the combinations their clients presented with and work therapeutically towards to contrary combinations, as identified. A hypothetical example of a clinical piece of work with a client could be found further in the summary section. The main clinical implications of the findings for each of the models were summarised in Table 5 and discussed in more detail further.

Table 5

Summary of Interactions Predictive of High and Low Chronic Stress

Interaction	High Chronic Stress	Low Chronic Stress
General Model		
Controlling PB x Extraversion	↑CP ↑E	↑CP ↓E
	↓CP ↓E	↓CP ↑E
Controlling PB x Agreeableness	↓CP ↑A	↑CP ↑A
	↑CP ↓A	↓CP ↓A
Achievement Model		
Controlling PB x Extraversion	↑CP ↑E	↑CP ↓E
	↓CP ↓E	↓CP ↑E
Controlling PB x Conscientiousness	↑CP ↑C	↓CP ↑C
	↓CP ↓C	↑CP ↓C

Note. PB – Parental Bonding; CP – Controlling Parental Bonding; E – Extraversion; A – Agreeableness; C – Conscientiousness; ↑ – High; ↓ – Low.

General Model of Chronic Stress

With regard to the general model of chronic stress, present findings emphasised the role of extraversion, emotional stability, and agreeableness as well as the interactions between controlling parental bonding with extraversion, agreeableness, and openness and the interaction between affectionate parental bonding and conscientiousness. The current study showed that it was the matching or mismatching between personal and social needs that constituted a protective factor in the former condition but a vulnerability in the latter. These patterns of interaction between individual dispositions can be worked with clinically. Furthermore, the model demonstrated the reciprocal causation between stress reactivity and chronic stress. Taking these findings into account, in a clinical context, either stress reactivity or chronic stress may be addressed in order to improve overall stress experience since one directly affects the other. It appeared essential for clinical interventions to break this cycle as otherwise the downward spiral of increasing chronic stress may have severe consequences.

In cognitive-behavioural therapy, therapeutic work can be focused on stress reactivity. Helping individuals to identify and monitor their reactivity in a similar manner as with negative automatic thoughts (Dobson & Dobson, 2009) may be an efficient way of lowering and controlling overall chronic stress. In light of the present finding of the reciprocal causation between chronic stress and stress reactivity, the role of stress reactivity as of a strong maintaining mechanism behind chronic stress was emphasised. Therefore, diminishing the magnitude of stress reactivity may allow the individual to break the cycle of continuous chronic stress.

Personality dispositions such as emotional stability or extraversion may provide another avenue for clinical intervention. While personality characteristics had been shown

to be stable and enduring (Costa & McCrae, 1994), they were not unchangeable, especially through therapeutic interventions (Roberts et al., 2007; Winston & Winston, 2002). Relational experiences in particular had been shown to be able to alter individuals' personality (Robins et al., 2002), which would be significant in a clinical context. In fact, psychodynamic practitioners may work with deeper issues and traumatic experiences in the past enabling clients to re-experience and re-evaluate those experiences thus alleviating distressing associations and improving mastery thus affecting the expression of personality dispositions (Winston & Winston, 2002).

Therapeutically, within a person-centred approach one would indeed expect a certain personality change following the fulfilment of a previously lacking 'core condition' of empathy, congruence, or unconditional positive regard (Clarke, 1994; Rogers, 1957), either of which can be undermined by previous experiences of controlling or/and unaffactionate parenting which could propel a person to take on a 'false self'. Winnicottian and Rogerian idea of the 'false self' can be applied to the current findings to describe this mismatching between personal and social needs. Thus, when a child was temperamentally predisposed to behave in one way (e.g. is quite extraverted) while the parents were highly controlling and demanded a behaviour contrary to the child's predisposition (e.g. practising playing a musical instrument instead of a team sport) a mismatching would occur. Such a mismatch would force the child to take on a certain image imposed by others, which could be seen as a 'false self'. Therefore, in line with the present findings, therapists may choose to address the 'false self' image created as an adaptation to the mismatch between one's personal needs and social demands sustained throughout upbringing.

There are various ways to work clinically with any given presentation, including chronic stress. As discussed in the present study, various aspects of parental bonding and personality are significantly implicated in chronic stress. Considering the importance of the interaction effects between parental bonding and personality dispositions, addressing the previous experience of such mismatching and the psychological adaptations one might have resorted to in therapeutic work by re-visiting corresponding memories and experiences may prove useful in clinical practice. Indeed, it appeared that combining personality dispositions with relational experiences may be an effective way of approaching the issues of both stress reactivity and chronic stress, which, in any case, were strongly interrelated.

Social Model

The social model of chronic stress suggested here offered an alternative perspective on the social aspects of stress that may be beneficial in therapy. The personal dispositions that were found to contribute to social stress reactivity include affection in parental bonding, agreeableness, extraversion, and emotional stability. These identified aspects can also be areas of focus for therapeutic work. Furthermore, the interaction between affection in parental bonding and agreeableness was another possible direction for therapeutic exploration. As suggested earlier with regard to the general model, therapeutic work around the experiences of mismatching between personal and social needs and the psychological cost of necessary adaptations appeared to be a promising direction in therapy.

Essentially, therapy of various modalities can benefit from exploring clients' perceptions and experiences with regards to affection. Psychodynamic therapists could explore past experiences in more depth, including memories and associations with regards

to early relational experiences and in particular the role and the nature of affection. Humanist and person-centred approaches could benefit from exploring one's needs for affection in their current life and their perception of the conditions for attaining it. CBT practitioners, on the other hand, can work with dysfunctional beliefs and attitudes in relation to affection, which could improve overall social stress reactivity and the experience of chronic stress.

Personality dispositions while being relatively stable (Costa & McCrae, 1994) may benefit from more careful examination and consideration. CBT practitioner may choose to work with automatic thoughts and behaviours in order to improve their client's emotional stability, agreeableness, and/or extraversion. For example mindfulness based interventions and practices have been shown to decrease neuroticism (Feltman, Robinson, & Ode, 2009; Giluk, 2009) (increase emotional stability) and improve psychological flexibility (Latzman & Masuda, 2013), which could perhaps be translated into higher emotional stability and agreeableness respectively.

Emotional stability was shown here to be one of the strongest aspects within the models of chronic stress. Thus the evidence of the associations between neuroticism reduction and mindfulness demonstrated by a range of research literature provides a potentially important avenue for therapeutic intervention. While these were only general directions, the personality traits identified in this study as essential for the social model of chronic stress suggested valuable possibilities for the focus of therapeutic work.

Achievement Model

Stress around achievement seemed to be strongly linked to certain aspects of both personality and social learning. Extraversion and emotional stability were implicated in achievement stress reactivity and chronic stress, thus therapeutic targeting of these

dispositions may be an effective way of ameliorating stress. As therapeutic interventions in general seem to balance personality (Winston & Winston, 2002), increase in emotional stability would have a positive effect on the overall experience of chronic stress. Achievement related chronic stress in general was significantly determined not only by emotional stability but also by the interactions of controlling parenting with extraversion and conscientiousness.

The significance of the interaction effects was also reflected by stress reactivities to work overload and to failure. This finding suggested a rather straightforward direction for clinical intervention: stress reactivity to work overload would be best addressed through targeting the combination of controlling parenting and conscientiousness, while stress reactivity to failure would be most responsive to challenging the interaction between controlling parenting and extraversion. Mindfulness based interventions had been shown to increase conscientiousness (Giluk, 2009) and emotional stability (Feltman et al., 2009; Latzman & Masuda, 2013), which represents an effective therapeutic direction for achievement stress reduction.

The role of interactions between controlling parenting and extraversion and interactions between controlling parenting and conscientiousness in the achievement model was particularly significant for understanding of chronic stress processes. Parental control and excessive overprotection appeared to have strong interaction effect on achievement related stress reactivity. Therefore, a therapeutic focus on an individual's perceptions and experience of control may prove effective and beneficial for reducing stress reactivity and ameliorating chronic stress. Furthermore, exploration of the mismatching between personal and social needs in relation to control in parenting and

extraversion and conscientiousness in particular appeared to be an effective intervention for better understanding and amelioration of achievement related chronic stress.

Cognitive behavioural therapies may choose to explore irrational beliefs around having and exercising control and then work to balance the beliefs and to restructure behavioural responses. Psychodynamic and humanistic approaches, on the other hand, may address the experiences of being controlled and explore the underlying feelings that those experiences might have given rise to. The experiences around control appear to be the cornerstone for understanding achievement stress.

Summary

In sum, therapeutic work with stress reactivity and chronic stress would significantly benefit from addressing issues of both control and affection in parental bonding and the personality dispositions – emotional stability, conscientiousness, agreeableness, openness, and extraversion. These aspects had been identified as interacting with one another in ways that result in matching or mismatching between personal and social needs. These interactions were essential in maintaining the reciprocal causation cycle between stress reactivity and chronic stress. If addressed therapeutically, stress reactivity could be diminished consequently reducing the overall chronic stress.

These aspects provide several focal points that could help therapeutic interventions to be more precise, effective, and problem-specific. While there would be various therapeutic approaches that practitioners may choose from, the identified aspects can be incorporated into those approaches as briefly suggested earlier. Understanding of the direct and interactive pathways leading to chronic stress can help therapists to address the problem more effectively.

Additionally, the results of the present study suggested a therapeutically beneficial way of effective identification and monitoring of possibly problematic aspects. In light of the findings suggesting that interaction between personal and social dispositions constitute a basis for stress reactivity and social stress, it could potentially be highly effective to use personality and parental bonding screening questionnaires with clients suffering from chronic stress. Such fast and standardized assessment can help practitioners to focus therapeutic work on the most significant aspects thus maximizing the effectiveness of their intervention and minimizing the cost both in terms of time and resources.

To provide a brief example of how the current findings may be applied therapeutically, the following would be an outline of a possible therapeutic process with a hypothetical client who suffered from chronic stress and was seeking therapy. The first step would be to ask the client to fill out the personality and the parental bonding questionnaires either during assessment or before the first session. The results of these questionnaires would reveal the area of mismatching that feeds stress reactivity and creates chronic stress for this person. The next step would be for the therapist to explain to the client how his personal dispositions might have been in conflict with social demands as posed by his parents. The purpose of such explanation would be twofold. First, informing the client of the underlying dynamics of his presenting problem can be therapeutic in itself through normalising the experience and making it comprehensible and thus easier to process and to cope with. Second, specification of a problem area would invite the client to think about the most relevant experiences in the past and tendencies in the present that would resonate with the mismatching aspects. At the same time, the specific area(s) of mismatch would enable the sessions to focus therapeutic work thus making the process more precise and efficient.

To continue with the present example, if the mismatching occured, for instance, between control in parental bonding and agreeableness, the therapist could ask the client to think of the instances when his/her parents exerted significant control over something the client disagreed with and how the client adapted and negotiated the mismatch between personal and social needs. The therapist would then work with identifying the pattern that was created and learnt over time in relation to the client's reactivity to similar mismatching situations. This pattern may represent the mechanism that indeed maintains stress reactivity and chronic stress. Therapeutic work with this pattern would then include identifying the personal meaning of such adaptation, recognizing the client's deeper needs and inclinations, finding cognitive and behavioural alternatives to their usual thinking and actions, and practising new approaches to potentially mismatching and thus stressful situations. While this would be only a general outline of a possible way of working therapeutically with chronic stress based on the current findings, it suggested a new approach to both conceptualising and working with chronic stress, which would be potentially effective due to its precise therapeutic focus and person-specific orientation.

In conclusion, the main contribution of the present study was the emphasis on the role of interaction between personal and social dispositions that underlie the experience of chronic stress. It was hypothesised that interactions between personal and social needs represent an effective way of understanding stress processes. While the question of mutual influence between nature and nurture is a separate topic that was not addressed here, this study shown that the interactions between personal and social individual dispositions were indeed defining in chronic stress. This study presented evidence supporting the theory that a mismatch between personal characteristics and social demands in upbringing may

explain stress reactivity and chronic stress later in life. Based on the present findings it was concluded that interaction between personal and social dispositions, in particular when mismatched, represented an effective way of understanding chronic stress. As such, therapeutic work aimed at minimizing the mismatch between personal and social dispositions would be a promising direction for counselling psychology.

APPENDICES

Appendix 1

Glossary

Stress - a state of mental or emotional strain or tension resulting from adverse or demanding circumstances.

Distress - perceived pain or suffering.

Chronic stress - a prolonged experience of continuous psychological strain stemming from one or multiple causes, lasting for at least six months, and causing subjective distress.

Personal dispositions - personal, inborn temperamental traits that are representative of a person's inclinations and needs.

Social dispositions - social, developmentally learnt features of individuals' way of being.

Affection in parental bonding – individuals' retrospective perceptions of their interactions with their mother and their father with regard to their experience of care and involvement as opposed to indifference and rejection.

Control in parental bonding – individuals' retrospective perceptions of their interactions with their mother and their father with regard to their experience of control, overprotection, and intrusion as opposed to encouragement of independence.

Appendix 2

The research for this project was submitted for ethics consideration under the reference PSYC 12/ 065 in the Department of Psychology and was approved under the procedures of the University of Roehampton's Ethics Committee on 04/02/2013.

A sample Consent Form is included below.

University of Roehampton London **ETHICS COMMITTEE**

PARTICIPANT CONSENT FORM

Title of Research Project: Constructing Chronic Stress: Development and Individual Differences

Brief Description of Research Project:

This research project aims to examine individual differences in chronic stress. In this comprehensive study, distinct individual characteristics, such as personal dispositions, habits, beliefs and attitudes, will be analysed in an attempt to create a model of chronic stress. Survey will ask about your preferences and attitudes, self-perceptions, relationships, life satisfaction, and general well-being. Participants' names will NOT be used in this study. A unique code will be provided for each participant in order to make the research data completely anonymous. Students will receive 1 course credit for the participation in this study.

Investigator Contact Details:

Elizaveta Orekhova
Department of Psychology
University of Roehampton
Whitelands College
Holybourne Avenue SW15 4JD
orekhove@roehampton.ac.uk
07570966773

Consent Statement:

I agree to take part in this research, and am aware that I am free to stop or withdraw at any point without penalty, if I choose to. If I'm a student, I understand that withdrawing from participation will not affect my studies. If I decide to withdraw, I will email the investigator. I understand that the information I provide will be treated in confidence by the investigator and that my identity will be protected in the publication of any findings.

Name …….

Signature ……

Date ……

Please note: if you have a concern about any aspect of your participation or any other queries please raise this with the investigator. However, if you would like to contact an independent party please contact the Head of Department (or if the researcher is a student you can also contact the Director of Studies.)

Director of Studies Contact Details:

Changiz Mohiyeddini[1]
University of Roehampton
Whitelands College
Holybourne Avenue
London SW15 4JD
c.mohiyeddini@roehampton.ac.uk
+44 (0)20 8392 3616

Head of Department Contact Details:

Diane Bray
University of Roehampton
Whitelands College
Holybourne Avenue
London SW15 4JD
D.Bray@roehampton.ac.uk
+44 (0)20 8392 3627

[1] Prof. Changiz Mohiyeddini was the original Director of Studies for this project, until he resigned from the university in September 2013.

Appendix 3

Debriefing Form

Title of Research Project: Constructing Chronic Stress: Development and Individual Differences

Thank you for participating in the present research project concerning individual differences in chronic stress. In this study you were asked to fill out questionnaires that measure perceived stress levels, personality traits, cognitive style, life regard, self-esteem, and perceived parenting during childhood.

Existing research suggests that individual difference in personality and perceived childhood experiences influence one's perception and appraisal of new events (e.g. Higgins & Scholer, 2008; Rinaman, Banihashemi, & Koehnle, 2011). Furthermore, it has been found that personal meaning that one assigns to events and expectations define appraisal (Cervone, 2004; Smith & Kirby, 2009), whereas positive cognitive style and appraisal are related to resilience against depression (Seligman, 2006).

In this study it is hypothesised that chronic stress is associated with a negative appraisal style particularly characterised by continuous negative expectations and catastrophic thinking, which are linked to certain personality traits and perceptions of early experiences.

Again, we thank you for your participation in this study. If you decide to withdraw from this study, please email the investigator and your data will be removed. If you know of any friends or acquaintances that are eligible to participate in this study, we request that you not discuss it with them until after they have had the opportunity to participate. Prior knowledge of questions asked during the study can invalidate the results.

We greatly appreciate your cooperation.

Please note: if you have a concern about any aspect of your participation or any other queries please raise this with the investigator. However, if you would like to contact an independent party please contact the Head of Department (or if the researcher is a student you can also contact the Director of Studies.)

Director of Studies Contact Details:

Changiz Mohiyeddini
University of Roehampton
Whitelands College
Holybourne Avenue
London SW15 4JD
c.mohiyeddini@roehampton.ac.uk

Head of Department Contact Details:

Diane Bray
University of Roehampton
Whitelands College
Holybourne Avenue
London SW15 4JD
D.Bray@roehampton.ac.uk

+44 (0)20 8392 3616 +44 (0)20 8392 3627

In the event that you feel emotionally or psychologically distressed by participation in this study, we encourage you to contact one of the following services:

Roehampton university students:

Student Welfare Officer
Ejiro Ejoh
Tel: 020 8392 3502
E.Ejoh@roehampton.ac.uk

The Student Medical Centre
Old Court, Froebel College, Roehampton University
Tel: 020 8392 3679

Putneymead Medical Centre
Tel: 020 8788 0686

All participants:

NHS Direct
www.nhsdirect.nhs.uk
Tel: 0845 4647 (24hrs a day).

Out of hours help lines:

- Harmoni: 0845 602 6292 (local NHS out of hours)
- Nightline: 020 7631 0101 (6pm - 8am term time only) or email: listening@nightline.org.uk
- Samaritans: 0845 790 9090
- Mind: 0300 123 3393
- HOPEline UK: 0800 068 4141
- Get connected (local counselling for under 25s; free for mobile phones): 0808 808 4994

Thanks again for your participation!

Appendix 4

Chronic Stress Questionnaire

This questionnaire asks about your general experience of stress in the recent past. Please rate your stress levels on a scale of 1 to 10, where "1" is "not stressed at all" and "10" is "extremely stressed."

Please indicate how stressed did you feel…

1. …over the past six months

   1…2…3…4…5…6…7…8…9…10

2. …over the past year

   1…2…3…4…5…6…7…8…9…10

BIBLIOGRAPHY

Alavifar, A., Karimimalayer, M., & Anuar, M. (2012). Structural equation modeling VS multiple regression. *Engineering Science and Technology: An International Journal (ESTIJ)*, *2*(2), 326–329.

Alford, B., & Beck, A. (1997). *The integrative power of cognitive therapy*. New York/ London: The Guilford Press.

Allison, P. D. (2003). Missing data techniques for structural equation modeling. *Journal of Abnormal Psychology*, *112*(4), 545–57. doi:10.1037/0021-843X.112.4.545.

Almeida, D. M. (2005). Resilience and Vulnerability to Daily Stressors Assessed via Diary Methods. *Current Directions in Psychological Science*, *14*(2), 64–68. doi:10.1111/j.0963-7214.2005.00336.x.

American Psychiatric Association (APA) (2000). Diagnostic and Statistical Manual of Mental Disorders (Revised 4th ed.). Washington, DC: Author.

Ames, S. C., Offord, K. P., Nirelli, L. M., Patten, C. a., Friedrich, W. N., Decker, P. a., & Hurt, R. D. (2005). Initial Development of a New Measure of Minor Stress for Adolescents: The Adolescent Minor Stress Inventory. *Journal of Youth and Adolescence*, *34*(3), 207–219. doi:10.1007/s10964-005-4303-6.

Assor, A., & Tal, K. (2012). When parents' affection depends on child's achievement: parental conditional positive regard, self-aggrandizement, shame and coping in adolescents. *Journal of Adolescence*, *35*(2), 249–60. doi:10.1016/j.adolescence.2011.10.004.

Assor, A., Vansteenkiste, M., & Kaplan, A. (2009). Identified versus introjected approach and introjected avoidance motivations in school and in sports: The limited benefits of

self-worth strivings. *Journal of Educational Psychology, 101*(2), 482–497. doi:10.1037/a0014236.

Bamber, M., & McMahon, R. (2008). Danger-early maladaptive schemas at work!: The role of early maladaptive schemas in career choice and the development of occupational stress in health workers. *Clinical Psychology & Psychotherapy*, *15*(2), 96–112. doi:10.1002/cpp.564.

Bandura, A. (1978). The self system in reciprocal determinism. *American Psychologist*, *33*(4), 344–358. doi:10.1037//0003-066X.33.4.344.

Bardi, A., Lee, J. A., Hofmann-Towfigh, N., & Soutar, G. (2009). The structure of intraindividual value change. *Journal of Personality and Social Psychology, 97*(5), 913–929. doi:10.1037/a0016617.

Baron, R. M., & Kenny, D. a. (1986). The moderator-mediator variable distinction in social psychological research: conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology, 51*(6), 1173–82. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/3806354.

Baum, A., Cohen, L., & Hall, M. (1993). Control and intrusive memories as possible determinants of chronic stress. *Psychosomatic Medicine, 55*, 274–286. Retrieved from http://www.psychosomaticmedicine.org/content/55/3/274.short.

Baumann, N., Kaschel, R., & Kuhl, J. (2005). Striving for unwanted goals: stress-dependent discrepancies between explicit and implicit achievement motives reduce subjective well-being and increase psychosomatic symptoms. *Journal of Personality and Social Psychology, 89*(5), 781–99. doi:10.1037/0022-3514.89.5.781.

Baumeister, R. F., & Leary, M. R. (1995). The need to belong: desire for interpersonal attachments as a fundamental human motivation. *Psychological Bulletin*, *117*(3), 497–529. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/7777651.

Beck, A., & Clark, D. (1997). An information processing model of anxiety: Automatic and strategic processes. *Behaviour Research and Therapy*, *35*(I), 49–58. Retrieved from http://www.sciencedirect.com/science/article/pii/S0005796796000691.

Beck, A. T., Butler, A. C., Brown, G. K., Dahlsgaard, K. K., Newman, C. F., & Beck, J. S. (2001). Dysfunctional beliefs discriminate personality disorders. *Behaviour Research and Therapy*, *39*(10), 1213–25. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/11579990.

Benjet, C., Borges, G., & Medina-Mora, M. E. (2010). Chronic childhood adversity and onset of psychopathology during three life stages: childhood, adolescence and adulthood. *Journal of Psychiatric Research*, *44*(11), 732–40. doi:10.1016/j.jpsychires.2010.01.004.

Bergdahl, J., Larsson, A., Nilsson, L., Riklund Ahlstrom, K., & Nyberg, L. (2005). Treatment of chronic stress in employees: Subjective, cognitive and neural correlates. *Scandinavian Journal of Psychology*, *46*, 395–402. Retrieved from http://onlinelibrary.wiley.com/doi/10.1111/j.1467-9450.2005.00470.x/full.

Blane, D., Brunner, E., & Wilkinson, R. (1996). *Health and social organization*. (D. Blane, E. Brunner, & R. Wilkinson, Eds.). Abingdon, UK: Taylor & Francis. doi:10.4324/9780203434932.

Boggiano, A. K. (1998). Maladaptive achievement patterns: a test of a diathesis-stress analysis of helplessness. *Journal of Personality and Social Psychology*, *74*(6), 1681–95. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/9654766.

BOHRF. (2005). Workplace interventions for people with common mental health problems: Evidence review and recommendations. London.

Bolger, N., & Zuckerman, A. (1995). A Framework for Studying Personality in the Stress Process. *Journal of Personality and Social Psychology*, *69*(5), 890–902.

Bowlby, J. (1988). *A secure base: Parent-child attachment and healthy human development*. Basic Books.

Boyes, M. E., & French, D. J. (2012). The mediating effect of appraisal on the relationship between neuroticism and coping during an anagram-solving task : A goodness-of-fit hypothesis perspective. *Personality and Individual Differences*, *53*, 306–311. doi:10.1016/j.paid.2012.03.037.

Brown, T., & Resellini, A. (2011). The direct and interactive effects of neuroticism and life stress on the severity and longitudinal course of depressive symptoms. *Journal of Abnormal Psychology*, *120*(4), 844–856. doi:10.1037/a0023035.

Calicchia, J. A., & Graham, L. B. (2006). Assessing the Relationship between Spirituality, Life Stressors, and Social Resources: Buffers of Stress in Graduate Students. *North American Journal of Psychology*, *8*(2), 307–320.

Cervone, D. (2004). The Architecture of Personality. *Psychological Review*, *111*(1), 183–204. doi:10.1037/0033-295X.111.1.183.

Clarke, P. (1994). A person-centred approach to stress management. *British Journal of Guidance & Counselling*, *22*(1), 27–37.

Cohen, J., Cohen, P., West, S., & Aiken, L. (2013). *Applied multiple regression/correlation analysis for the behavioral sciences* (3rd ed.). London: Lawrence Erlbaum Associates.

Cohen, S., Janicki-Deverts, D., Miller, G.E. (2007). Psychological stress and disease. *JAMA*, 298, 1685–1687.

Cooklin, A. R., Giallo, R., D'Esposito, F., Crawford, S., & Nicholson, J. M. (2013). Postpartum maternal separation anxiety, overprotective parenting, and children's social-emotional well-being: longitudinal evidence from an Australian cohort. *Journal of Family Psychology*, *27*(4), 618–628. doi:10.1037/a0033332.

Costa, P., & McCrae, R. (1990). Personality: Another "Hidden Factor" in Stress Research. *Psychological Inquiry, 1*(1), 22–24. Retrieved from http://www.tandfonline.com/doi/pdf/10.1207/s15327965pli0101_5.

Costa, P., & McCrae, R. (1994). Set like plaster? Evidence for the stability of adult personality. In T. Heatherton & J. Weinberger (Eds.), *Can personality change?* (pp. 21–40). Washington, DC, US: American Psychological Association. Retrieved from http://doi.apa.org/psycinfo/1994-97042-002.

Cronbach, L. (1951). Coefficient alpha and the internal structure of tests. *Psychometrika, 16*(3), 297–334. Retrieved from http://link.springer.com/article/10.1007/BF02310555

Cronk, B. C. (2008). *A Step-by-Step Guide to Analysis and Interpretation* (5th ed.). Pyrczak Publishing.

Dick, P. (2000). The social construction of the meaning of acute stressors: a qualitative study of the personal accounts of police officers using a stress counselling service. *Work & Stress, 14*(3), 226–244.

Diehl, M., & Hay, E. L. (2010). Risk and resilience factors in coping with daily stress in adulthood: the role of age, self-concept incoherence, and personal control. *Developmental Psychology, 46*(5), 1132–46. doi:10.1037/a0019937.

Diem-Wille, G. (2011). *The Early Years of Life*. London: Karnac Books.

Dobson, D., & Dobson, K. (2009). *Evidence-based Practice of Cognitive-Behavioural Therapy*. New York/ London: The Guilford Press.

Donnellan, M.B., Oswald, F.L., Baird, B.M., & Lucas, R.E. (2006). The mini-IPIP scales: Tiny-yet-effective measures of the Big Five factors of personality. *Psychological Assessment*, 18, 192-203.

Drapper, N., & Smith, H. (1998). *Applied Regression Analysis*. *Wiley, New York* (3rd ed.). Wiley-Interscience. Retrieved from http://ca.wiley.com/remtitle.cgi?0471170828.

Dryden, W., & Mytton, J. (1999). *Four Approaches to Counselling and Psychotherapy*. *East*. London: Routledge.

Ebstrup, J., Eplov, L., Pisinger, C., & Jorgensen, T. (2011). Association between the Five Factor personality traits and perceived stress: is the effect mediated by general self-efficacy? *Anxiety, Stress & Coping*, *24*(4), 407–419. Retrieved from http://www.tandfonline.com/doi/abs/10.1080/10615806.2010.540012.

Ebstrup, J. F., Eplov, L. F., Pisinger, C., & Jorgensen, T. (2011). An Association between the Five Factor personality traits and perceived stress : is the effect mediated by general self- efficacy ? *Anxiety, Stress, and Coping*, *24*(4), 407–419.

Elfering, A., Grebner, S., Semmer, N., Kaiser-Freiburghaus, D., Lauper-Del Ponte, S., & Witschi, I. (2005). Chronic job stressors and job control: Effects on event-related coping success and well-being. *Journal of Occupational and Organizational Psychology*, *78*(2), 237–252. doi:10.1348/096317905X40088.

Feltman, R., Robinson, M. D., & Ode, S. (2009). Mindfulness as a moderator of neuroticism–outcome relations: A self-regulation perspective. *Journal of Research in Personality*, *43*(6), 953–961. doi:10.1016/j.jrp.2009.08.009.

Floyd, K., Hess, J. A., Miczo, L. A., Halone, K. K., Mikkelson, A. C., & Tusing, K. J. (2005). Human Affection Exchange: VIII. Further Evidence of the Benefits of Expressed Affection. *Communication Quarterly*, *53*(3), 285–303. doi:10.1080/01463370500101071.

Floyd, K., Pauley, P. M., & Hesse, C. (2010). State and Trait Affectionate Communication Buffer Adults' Stress Reactions. *Communication Monographs*, *77*(4), 618–636. doi:10.1080/03637751.2010.498792.

Floyd, K., & Riforgiate, S. (2008). Affectionate Communication Received from Spouses Predicts Stress Hormone Levels in Healthy Adults. *Communication Monographs*, *75*(4), 351–368. doi:10.1080/03637750802512371.

Folkman, S., Lazarus, R. S., Dunkel-schetter, C., Delongis, A., & Gruen, R. J. (1986). Dynamics of a Stressful Encounter : Cognitive Appraisal , Coping , and Encounter Outcomes. *Journal of Personality and Social Psychology*, *50*(5), 992–1003.

Fonagy, P., Gergely, G., & Target, M. (2007). The parent-infant dyad and the construction of the subjective self. *Journal of Child Psychology and Psychiatry, and Allied Disciplines*, *48*(3-4), 288–328. doi:10.1111/j.1469-7610.2007.01727.x.

Fraley, R. C. (2002). Attachment Stability From Infancy to Adulthood: Meta-Analysis and Dynamic Modeling of Developmental Mechanisms. *Personality and Social Psychology Review*, *6*(2), 123–151. doi:10.1207/S15327957PSPR0602_03.

Freud, S., & Gay, P. (1989). *The Freud Reader*. New York/ London: W. W. Norton & Company, Inc.

Freud, S., & Phillips, A. (2006). *The Penguin Freud Reader*. *England: Penguin Books*. London: Penguin.

Furnham, A. (2012). Lay understandings of defence mechanisms: the role of personality traits and gender. *Psychology, Health & Medicine*, *17*(6), 723–34. doi:10.1080/13548506.2012.663922.

Furutani, M., Tanaka, H., & Agari, I. (2011). Anxiety and heart rate variability before sleep indicate chronic stress in students. *Perceptual and Motor Skills*, *112*(1), 138–150. Retrieved from http://www.amsciepub.com/doi/abs/10.2466/09.13.PMS.112.1.138-150.

Garcia-Banda, G., Servera, M., Chellew, K., Meisel, V., Fornes, J., Cardo, E., Perez, G., Riesco, M., & Doctor, R. (2011). Prosocial personality traits and adaptation to stress. *Social Behavior and Personality*, *39*(10), 1337–1348.

Gil, A. (2005). Repressing distress in childhood: a defense against health-related stress. *Child psychiatry and human development*, *36*(1), 27–52. doi:10.1007/s10578-004-3605-3.

Gillon, E. (2007). *Person-Centred Counselling Psychology: An Introduction*. London: Sage Publications, Inc.

Giluk, T. L. (2009). Mindfulness, Big Five personality, and affect: A meta-analysis. *Personality and Individual Differences*, *47*(8), 805–811. doi:10.1016/j.paid.2009.06.026.

Goldberg. (1999). Personality Psychology in Europe. In I. Mervielde, I. Deary, F. De Fruyt, & F. Ostendorf (Eds.), *Personality psychology in Europe* (pp. 7–28). Tilburg, The Netherlands: Tilburg University Press. Retrieved from http://projects.ori.org/lrg/PDFs_papers/A broad-bandwidth inventory.pdf.

Goldberg, L.R., Johnson, J. A., Eber, H. W., Hogan, R., Ashton, M. C., Cloninger, C. R., & Gough, H. G. (2006). The international personality item pool and the future of

public-domain personality measures. *Journal of Research in Personality, 40*(1), 84–96. doi:10.1016/j.jrp.2005.08.007.

Goldberg, L. (1990). An alternative "description of personality": the big-five factor structure. *Journal of Personality and Social Psychology, 59*(6), 1216–1229. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/2283588.

Gottlieb, B. H. (1997). *Coping with chronic stress*. New York: Springer.

Gouin, J.-P., Glaser, R., Malarkey, W. B., Beversdorf, D., & Kiecolt-Glaser, J. (2012). Chronic stress, daily stressors, and circulating inflammatory markers. *Health Psychology : Official Journal of the Division of Health Psychology, American Psychological Association, 31*(2), 264–8. doi:10.1037/a0025536.

Hale, C. J., Hannum, J. W., & Espelage, D. L. (2005). Social support and physical health: the importance of belonging. *Journal of American College Health*, *53*(6), 276–284. doi:10.3200/JACH.53.6.276-284.

Hammen, C., Kim, E. Y., Eberhart, N. K., & Brennan, P. A. (2009). Chronic and acute stress and the prediction of major depression in women. *Depression and Anxiety*, *26*(8), 718–723. doi:10.1002/da.20571.

Hankin, B. L., Mermelstein, R., & Roesch, L. (2007). Sex differences in adolescent depression: stress exposure and reactivity models. *Child Development*, *78*(1), 279–95. doi:10.1111/j.1467-8624.2007.00997.x.

Heim, C., Newport, D. J., Wagner, D., Wilcox, M. M., Miller, A. H., & Nemeroff, C. B. (2002). The role of early adverse experience and adulthood stress in the prediction of neuroendocrine stress reactivity in women: a multiple regression analysis. *Depression and anxiety*, *15*(3), 117–25. doi:10.1002/da.10015.

Hofmann, S. G., Asmundson, G. J. G., & Beck, A. T. (2013). The science of cognitive therapy. *Behavior Therapy*, *44*(2), 199–212. doi:10.1016/j.beth.2009.01.007.

Hopwood, C. J., Donnellan, M. B., Blonigen, D. M., Krueger, R. F., McGue, M., Iacono, W. G., & Burt, S. A. (2011). Genetic and environmental influences on personality trait stability and growth during the transition to adulthood: a three-wave longitudinal study. *Journal of Personality and Social Psychology*, *100*(3), 545–56. doi:10.1037/a0022409.

Huether, G. (1996). The central adaptation syndrome: psychosocial stress as a trigger for adaptive modifications of brain structure and brain function. *Progress in Neurobiology*, *48*(6), 569–612. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/8809909.

IAPT Programme. (2010). Realising the benefits: IAPT at full roll out. National Mental Health Development Unit, Department of Health. London: DoH.

Jenkins, D., & Palmer, S. (2003). A multimodal assessment andrational emotive behavioural approach to stress counselling: a case studdy. *Counselling Psychology Quarterly*, *16*(3), 265–287.

John, O., Robins, R., & Pervin, L. (Eds.). (2008). *Handbook of Personality: Theory and Research*. *Personality and Individual Differences* (3rd ed., Vol. 24). New York/ London: The Guilford Press. Retrieved from http://linkinghub.elsevier.com/retrieve/pii/S0191886997810008.

Johnson, J. G., Liu, L., & Cohen, P. (2011). Parenting behaviours associated with the development of adaptive and maladaptive offspring personality traits. *Canadian Journal of Psychiatry. Revue Canadienne de Psychiatrie*, *56*(8), 447–56. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/21878155.

Kammeyer-Mueller, J. D., Judge, T. a, & Scott, B. a. (2009). The role of core self-evaluations in the coping process. *The Journal of Applied Psychology*, *94*(1), 177–95. doi:10.1037/a0013214.

Kendler, K. S., Gardner, C. O., & Prescott, C. A. (2003). Personality and the experience of environmental adversity. *Psychological Medicine*, *33*(7), 1193–1202. doi:10.1017/S0033291703008298.

Kenny, D. (2014). Measuring model fit. Retrieved July 14, 2014, from http://davidakenny.net/cm/fit.htm.

Kilfedder, C., Power, K., Karatzias, T., McCafferty, A., Niven, K., Chouliara, Z., & Sharp, S. (2010). A randomized trial of face-to-face counselling versus telephone counselling versus bibliotherapy for occupational stress. *Psychology and Psychotherapy*, *83*(Pt 3), 223–42. doi:10.1348/147608309X476348.

Kline, R. B. (2010). *Principles and Practice of Structural Equation Modeling*. Guilford Publications. Retrieved from http://lib.myilibrary.com?ID=272583.

Kline, R. B. (2012). Assumptions in structural equation modeling. In R. Hoyle (Ed.), *Handbook of structural equation modeling* (pp. 111–125). New York: Guilford Press.

Kopp, M. S., & Réthelyi, J. (2004). Where psychology meets physiology: chronic stress and premature mortality--the Central-Eastern European health paradox. *Brain Research Bulletin*, *62*(5), 351–67. doi:10.1016/j.brainresbull.2003.12.001.

Kopp, M. S., Skrabski, A., Székely, A., Stauder, A., & Williams, R. (2007). Chronic stress and social changes: socioeconomic determination of chronic stress. *Annals of the New York Academy of Sciences*, *1113*, 325–38. doi:10.1196/annals.1391.006.

Kraemer, H. C., Stice, E., Kazdin, A., Offord, D., & Kupfer, D. (2001). How Do Risk Factors Work Together? Mediators, Moderators, and Independent, Overlapping, and Proxy Risk Factors. *American Journal of Psychiatry*, *158*, 848–856.

Kudielka, B., & Kirschbaum, C. (2007). Biological basis of the stress response. In M. Al'Absi (Ed.), *Stress and Addiction: Biological and Psychological Mechanisms* (pp. 3–20). Elsevier Ltd.

Latzman, R. D., & Masuda, A. (2013). Examining mindfulness and psychological inflexibility within the framework of Big Five personality. *Personality and Individual Differences*, *55*(2), 129–134. doi:10.1016/j.paid.2013.02.019.

Lazarus, R. S., DeLongis, A., Folkman, S., & Gruen, R. (1985). Stress and adaptational outcomes. The problem of confounded measures. *The American psychologist*, *40*(7), 770–85. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/4037513.

Lazarus, R. (1999). *Stress and emotion: A new synthesis*. *Emotion*. New York: Springer Publishing Company.

Lee, R. M., Draper, M., & Lee, S. (2001). Social connectedness, dysfunctional interpersonal behaviors, and psychological distress: Testing a mediator model. *Journal of Counseling Psychology*, *48*(3), 310–318. doi:10.1037//0022-0167.48.3.310.

Lee-Baggley, D., Preece, M., & Delongis, A. (2005). Coping with interpersonal stress: role of big five traits. *Journal of Personality*, *73*(5), 1141–80. doi:10.1111/j.1467-6494.2005.00345.x.

Lepore, S. J., Evans, G. W., & Schneider, M. L. (1991). Dynamic role of social support in the link between chronic stress and psychological distress. *Journal of Personality and Social Psychology*, *61*(6), 899–909. doi:10.1037//0022-3514.61.6.899.

Little, R. J. (1988). A Test of Missing Completely at Random for Multivariate Data with Missing Values. *Journal of the American Statistical Association*, *83*(404), 1198.

Lupien, S. J., McEwen, B. S., Gunnar, M. R., & Heim, C. (2009). Effects of stress throughout the lifespan on the brain, behaviour and cognition. *Nature Reviews. Neuroscience*, *10*(6), 434–45. doi:10.1038/nrn2639.

Mace, C. (Ed.). (1995). *The Art and Science of Assessment in Psychotherapy*. London and New York: Routledge. doi:10.4324/9780203359914.

MacLeod, C., & Cohen, I. L. (1993). Anxiety and the interpretation of ambiguity: a text comprehension study. *Journal of Abnormal Psychology*, *102*(2), 238–47.

Marin, M.-F., Lord, C., Andrews, J., Juster, R.-P., Sindi, S., Arsenault-Lapierre, G., Fiocco, A. J., & Lupien, S. J. (2011). Chronic stress, cognitive functioning and mental health. *Neurobiology of Learning and Memory*, *96*(4), 583–595. doi:10.1016/j.nlm.2011.02.016.

Maslow, A. (1943). A theory of human motivation. *Psychological Review*, *50*(4), 370–396.

Matthews, G., Emo, A. K., Funke, G., Zeidner, M., Roberts, R. D., Costa, P. T., & Schulze, R. (2006). Emotional intelligence, personality, and task-induced stress. *Journal of Experimental Psychology. Applied*, *12*(2), 96–107. doi:10.1037/1076-898X.12.2.96.

Matud, M. P. (2004). Gender differences in stress and coping styles. *Personality and Individual Differences*, *37*(7), 1401–1415. doi:10.1016/j.paid.2004.01.010.

Maunder, R. G., Lancee, W. J., Nolan, R. P., Hunter, J. J., & Tannenbaum, D. W. (2006). The relationship of attachment insecurity to subjective stress and autonomic function during standardized acute stress in healthy adults. *Journal of Psychosomatic Research*, *60*(3), 283–90. doi:10.1016/j.jpsychores.2005.08.013.

McCrae, R. R., & Costa, P. T. (1997). Personality trait structure as a human universal. *The American Psychologist*, *52*(5), 509–16. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/9145021.

McCrae, R. R., & John, O. P. (1992). An introduction to the five-factor model and its applications. *Journal of Personality*, *60*(2), 175–215. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/1635039.

McEwen, B. (2003). Early life influences on life-long patterns of behavior and health. *Mental Retardation and Developmental Disabilities Research Reviews*, *9*(3), 149–54. doi:10.1002/mrdd.10074.

McEwen, B. (2007). Physiology and neurobiology of stress and adaptation: central role of the brain. *Physiological Reviews*, *87*, 873–904. doi:10.1152/physrev.00041.2006.

McEwen, B. S. (2000). The neurobiology of stress: from serendipity to clinical relevance. *Brain Research*, *886*, 172–189. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/11119695.

McIntyre, K. P., Korn, J. H., & Matsuo, H. (2008). Sweating the small stuff: how different types of hassles result in the experience of stress. *Stress and Health*, *24*, 383–392. doi:10.1002/smi.

McLeod, J. (2010). The effectiveness of workplace counselling: A systematic review. *Counselling and Psychotherapy Research*, *10*(4), 238–248. doi:10.1080/14733145.2010.485688.

McManus, I. C., Winder, B. C., & Gordon, D. (2002). The causal links between stress and burnout in a longitudinal study of UK doctors. *Lancet*, *359*(9323), 2089–90. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/12086767.

Meredith, P., Ownsworth, T., & Strong, J. (2008). A review of the evidence linking adult attachment theory and chronic pain: presenting a conceptual model. *Clinical Psychology Review*, *28*(3), 407–29. doi:10.1016/j.cpr.2007.07.009.

Milner, J., & O'Byrne, P. (2004). *Assessment in Counselling: Theory, process and decision making*. Palgrave Macmillan.

Muthen, L., & Muthen, B. (2010). *Mplus User's Guide* (Sixth.). Los Angeles, CA: Muthén & Muthén.

Nachmias, M., Gunnar, M., Mangelsdorf, S., Parritz, R. H., & Buss, K. (1996). Behavioral inhibition and stress reactivity: the moderating role of attachment security. *Child Development*, *67*(2), 508–22.

Newcomb, A. F., Bukowski, W. M., & Pattee, L. (1993). Children's peer relations: A meta-analytic review of popular, rejected, neglected, controversial, and average sociometric status. *Psychological Bulletin*, *113*(1), 99–128. doi:10.1037//0033-2909.113.1.99.

Noftle, E. E., & Shaver, P. R. (2006). Attachment dimensions and the big five personality traits: Associations and comparative ability to predict relationship quality. *Journal of Research in Personality*, *40*(2), 179–208. doi:10.1016/j.jrp.2004.11.003.

Ozer, D. J., & Benet-Martínez, V. (2006). Personality and the prediction of consequential outcomes. *Annual Review of Psychology*, *57*, 401–21. doi:10.1146/annurev.psych.57.102904.190127.

Park, C. L., & Folkman, S. (1997). Meaning in the context of stress and coping. *Review of General Psychology*, *1*(2), 115–144. doi:10.1037//1089-2680.1.2.115.

Park, C. L., & Gutierrez, I. A. (2013). Global and situational meanings in the context of trauma: Relations with psychological well-being. *Counselling Psychology Quarterly*, *26*(1), 8–25. doi:10.1080/09515070.2012.727547.

Parker, G., Tupling, H., & Brown, L. (1979). A Parental Bonding Instrument. *British Journal of Medical Psychology*, *52*, 1–10.

Pedrelli, P., Feldman, G. C., Vorono, S., Fava, M., & Petersen, T. (2008). Dysfunctional attitudes and perceived stress predict depressive symptoms severity following antidepressant treatment in patients with chronic depression. *Psychiatry Research*, *161*(3), 302–8. doi:10.1016/j.psychres.2007.08.004.

Pettit, J. W., Green, K. L., Grover, K. E., Schatte, D. J., & Morgan, S. T. (2011). Domains of chronic stress and suicidal behaviors among inpatient adolescents. *Journal of Clinical Child and Adolescent Psychology : The Official Journal for the Society of Clinical Child and Adolescent Psychology, American Psychological Association, Division 53*, *40*(3), 494–9. doi:10.1080/15374416.2011.563466.

Raykov, T., & Marcoulides, G. (2006). *A First Course in Structural Equation Modeling* (Second.). Mahwah, New Jersey: Lawrence Erlbaum Associates.

Repetti, R. L., Taylor, S. E., & Seeman, T. E. (2002). Risky Families : Family Social Environments and the Mental and Physical Health of Offspring, *128*(2), 330–366. doi:10.1037//0033-2909.128.2.330.

Roberts, B. W., Kuncel, N. R., Shiner, R., Caspi, A., & Goldberg, L. R. (2007). The Power of Personality: The Comparative Validity of Personality Traits, Socioeconomic Status, and Cognitive Ability for Predicting Important Life Outcomes. *Perspectives on Psychological Science*, *2*(4), 313–345. doi:10.1111/j.1745-6916.2007.00047.x.

Robins, R. W., Caspi, A., & Moffitt, T. E. (2002). It's not just who you're with, it's who you are: personality and relationship experiences across multiple relationships. *Journal of Personality*, *70*(6), 925–64.

Rogers, C. (1957). The necessary and sufficient conditions of therapeutic personality change. In H. Kirschenbaum & V. Land Handerson (Eds.), *The Carl Rogers Reader* (Vol. 21, pp. 95–103). London: Constable.

Rogers, C. (1967). *On Becoming a Person: A Therapist view of Psychotherapy*. London: Constable.

Rudolph, K. D., & Hammen, C. (1999). Age and gender as determinants of stress exposure, generation, and reactions in youngsters: a transactional perspective. *Child Development*, *70*(3), 660–77.

Safford, S. M., Alloy, L. B., & Pieracci, A. (2007). A Comparison of Two Measures of Parental Behavior. *Journal of Child and Family Studies*, *16*(3), 375–384. doi:10.1007/s10826-006-9092-3.

Sampson, H. (1990). How the patient's sense of danger and safety influence the analytic process. *Psychoanalytic Psychology*, *7*(1), 115–124. doi:10.1037//0736-9735.7.1.115.

Sandler, J. (2003). On attachment to internal objects. *Psychoanalytic Inquiry*, *21*(1), 12–26.

Schetter, C. D., & Dolbier, C. (2011). Resilience in the Context of Chronic Stress and Health in Adults. *Social and Personality Psychology Compass*, *5*(9), 634–652. doi:10.1111/j.1751-9004.2011.00379.x.

Schlomer, G. L., Bauman, S., & Card, N. a. (2010). Best practices for missing data management in counseling psychology. *Journal of Counseling Psychology*, *57*(1), 1–10. doi:10.1037/a0018082.

Schlotz, W., Yim, I. S., Zoccola, P. M., Jansen, L., & Schulz, P. (2011). The Perceived Stress Reactivity Scale: measurement invariance, stability, and validity in three countries. *Psychological Assessment*, *23*(1), 80–94. doi:10.1037/a0021148.

Schneider, T. R. (2004). The role of neuroticism on psychological and physiological stress responses. *Journal of Experimental Social Psychology*, *40*(6), 795–804. doi:10.1016/j.jesp.2004.04.005.

Schneider, T. R. (2008). Evaluations of stressful transactions: what's in an appraisal? *Stress and Health*, *24*, 151–158. doi:10.1002/smi.

Schrodt, P., Ledbetter, A. M., & Ohrt, J. K. (2007). Parental Confirmation and Affection as Mediators of Family Communication Patterns and Children's Mental Well-Being. *Journal of Family Communication*, *7*(1), 23–46. doi:10.1207/s15327698jfc0701_3.

Schubert, C., Lambertz, M., Nelesen, R. a, Bardwell, W., Choi, J.-B., & Dimsdale, J. E. (2009). Effects of stress on heart rate complexity--a comparison between short-term and chronic stress. *Biological Psychology*, *80*(3), 325–32. doi:10.1016/j.biopsycho.2008.11.005.

Schumacker, R., & Lomax, R. (2004). *A beginner's guide to structural equation modeling* (Second.). Mah: Lawrence Erlbaum Associates.

Seligman, M. (2006). *Learned Optimism: How to change your mind and your life. Epidemiology (Cambridge, Mass.)* (First., Vol. 9). New York: Vintage Books. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/21878494.

Seppala, E., Rossomando, T., & Doty, J. (2013). Social Connection and Compassion: Important Predictors of Health and Well-Being. *Social Research*, *80*(2), 411–431.

Shih, J. H., Eberhart, N. K., Hammen, C. L., & Brennan, P. a. (2006). Differential exposure and reactivity to interpersonal stress predict sex differences in adolescent

depression. *Journal of Clinical Child and Adolescent Psychology : The Official Journal for the Society of Clinical Child and Adolescent Psychology, American Psychological Association, Division 53*, *35*(1), 103–15. doi:10.1207/s15374424jccp3501_9.

Smith, C. A., & Kirby, L. D. (2009). Putting appraisal in context : Toward a relational model of appraisal and emotion. *Cognition and Emotion*, *23*(7), 1352–1373. doi:10.1080/02699930902860386.

Sprague, J., Verona, E., Kalkhoff, W., & Kilmer, A. (2011). Moderators and mediators of the stress-aggression relationship: executive function and state anger. *Emotion*, *11*(1), 61–73. doi:10.1037/a0021788.

Stambor, Z. 2006. Stressed out nation. Monitor on Psychology 37(4).

Steverink, N., Veenstra, R., Oldehinkel, A. J., Gans, R. O. B., & Rosmalen, J. G. M. (2011). Is social stress in the first half of life detrimental to later physical and mental health in both men and women? *European Journal of Ageing*, *8*(1), 21–30. doi:10.1007/s10433-011-0178-4.

Stiles, W. B., Barkham, M., Mellor-Clark, J., & Connell, J. (2008). Effectiveness of cognitive-behavioural, person-centred, and psychodynamic therapies in UK primary-care routine practice: replication in a larger sample. *Psychological Medicine*, 38, 677-688.

Stress. (2014). In *Oxford Dictionary of English*. Retrieved from http://www.oxforddictionaries.com/definition/english/stress.

Stroud, L. R., Salovey, P., & Epel, E. S. (2002). Sex differences in stress responses: social rejection versus achievement stress. *Biological Psychiatry*, *52*(4), 318–27.

Thoits, P. A. (1995). Stress, coping, and social support processes: where are we? What next? *Journal of Health and Social Behavior, Spec No*(1995), 53–79.

Thompson, R. A. (2008). Attachment-related mental representations: introduction to the special issue. *Attachment & Human Development*, *10*(4), 347–58. doi:10.1080/14616730802461334.

Uliaszek, A. A, Zinbarg, R. E., Mineka, S., Craske, M. G., Griffith, J. W., Sutton, J. M., … Hammen, C. (2011). A longitudinal examination of stress generation in depressive and anxiety disorders. *Journal of Abnormal Psychology*, *121*(1), 4–15. doi:10.1037/a0025835.

Ungar, M. (2009). Overprotective Parenting: Helping Parents Provide Children the Right Amount of Risk and Responsibility. *The American Journal of Family Therapy*, *37*(3), 258–271. doi:10.1080/01926180802534247.

Vollrath, M. (2001). Personality and stress. *Scandinavian Journal of Psychology*, *42*, 335–347.

Want, J., & Kleitman, S. (2006). Imposter phenomenon and self-handicapping: Links with parenting styles and self-confidence. *Personality and Individual Differences*, 40(5), 961-971.

Wells, A. (2001). *Emotional disorders and Metacognition: Innovative Cognitive Therapy*. London: John Wiley & Sons, LTD.

Wheaton, B. (1997). The nature of chronic stress. In B. H. Gottlieb (Ed.), *Coping with chronic stress* (pp. 43–73). New York: Plenum Press.

Williams, P. G., Rau, H. K., Cribbet, M. R., & Gunn, H. E. (2009). Openness to Experience and stress regulation. *Journal of Research in Personality*, *43*(5), 777–784. doi:10.1016/j.jrp.2009.06.003.

Winnicott, D. (1996). *Thinking about children*. Reading, Massachusetts: Addison-Wesley.

Winston, A., & Winston, B. (2002). *Handbook of integrated short-term psychotherapy*. Washington, DC: American Psychiatric Publishing, Inc.

Wöller, W., Leichsenring, F., Leweke, F., & Kruse, J. (2012). Psychodynamic psychotherapy for posttraumatic stress disorder related to childhood abuse--Principles for a treatment manual. *Bulletin of the Menninger Clinic*, *76*(1), 69–93. doi:10.1521/bumc.2012.76.1.69.